

A Companion to Greek Architecture

Margaret M. Miles

VISIT...

LANZAROTE
Caliente.COM

BLACKWELL COMPANIONS TO THE ANCIENT WORLD

A COMPANION TO
**GREEK
ARCHITECTURE**

EDITED BY MARGARET M. MILES



WILEY Blackwell

Table of Contents

Cover

Title Page

Preface

List of Illustrations

Glossary

List of Maps

Notes on Contributors

Introduction

REFERENCES

PART I: Invention, Design, and Construction

CHAPTER 1: Landscape and Setting

Approaches

Physical Geography

Climate and Microclimate

Ground Cover and Zoning

From Relief to Landscape

Agriculture, Gardens, and Groves

Mineral Resources

Ancient Responses: Affective, Artistic, and Architectural

FURTHER READING

REFERENCES

CHAPTER 2: Early Greek Temples

From the House of Rulers to the House of the Gods

The Emergence of the Greek Temple: Protogeometric
Cult Buildings

The Birth of the Panhellenic Sanctuaries and the
Development of the Temples

Altars, Cult Bases, Votives, and Dining Facilities

The Early Use of the Peristyle

The Peristyle in the Early Archaic period

The Temple of Apollo at Soros

Temples as *Hestiatoria*

FURTHER READING

REFERENCES

CHAPTER 3: Monumentality and Foreign Influence in Early Greek Temples

Monumental Scale

Peristyle

Stone Construction

Tile Roofs

Architectural Orders

Moldings

Foreign Influence: Egypt and the Near East

FURTHER READING

REFERENCES

CHAPTER 4: Origins and Design of Terracotta Roofs in the Seventh Century BCE

Introduction

The First Terracotta Roof Systems

Tile Manufacture and Technical Innovation

Conclusions

ACKNOWLEDGMENTS

FURTHER READING

REFERENCES

CHAPTER 5: The Greek East

The Major Works

The Kroisos Temple

The Tunnel of Eupalinos

Intercultural Context

FURTHER READING

REFERENCES

CHAPTER 6: The Greek West

Introduction

The Geometric and Orientalizing Periods

The Early and Middle Archaic Periods

The Late Archaic Period

The Early Classical Period

The High Classical Period

The Late Classical and Hellenistic Periods

FURTHER READING

REFERENCES

CHAPTER 7: The Use of Geometry by Ancient Greek Architects

Geometry in Greece

Practical Applications in Greek Architectural Design

Tools and Drawings

Examples of Geometry in Use

Vitruvius' Use of the Greek Tradition of Applied Geometry

FURTHER READING

REFERENCES

CHAPTER 8: How Buildings Were Constructed

Literary Sources and Building Inscriptions

Monumental Building Practices

Construction Materials

Quarrying and Transportation of Building Materials

Site Preparation and Foundations

Wall Construction

The Arch

Architectural Design

Refinements

FURTHER READING

REFERENCES

PART II: Temples and Sanctuaries

CHAPTER 9: "Internationalism" in Architecture

History and Topography of Olympia

Architecture at Olympia

Foundation I: The Treasury of Sikyon

Foundation II: The Treasury of Syracuse

Foundation IV: The Treasury of Epidamnos

Foundation IX: The Treasury of Selinous

Foundation X: The Treasury of Metapontum

Foundation XI: The Treasury of Megara

Foundation XII: The Treasury of Gela

Unattributed Architectural Elements

Philippeion

Internationalism at Olympia

FURTHER READING

REFERENCES

CHAPTER 10: Prestige in Greek Sanctuaries

Introduction

Prestige: The Story So Far

The Structure Itself

The Space around the Structure

The Experience of the Structure Over Time

Conclusions

FURTHER READING

REFERENCES

CHAPTER 11: The Periclean Acropolis

The Persian War and the Acropolis

Ruins as Monuments: The Acropolis North Wall

The Propylaia and the Temple of Athena Polias

The Mycenaean Era and the Periclean Acropolis

The Archaic Tradition of Procession

Non-Processional Uses of the Ionic Order

Ionic as Direct Address to the City

The Monumental Effect of the Periclean Acropolis

FURTHER READING

REFERENCES

CHAPTER 12: Color and Carving

Color

Relief Sculpture

Sculpture in the Round

The Parthenon

FURTHER READING

REFERENCES

CHAPTER 13: Attic Sanctuaries

Geography and Politico-Spatial Organization

Panathenian Sanctuaries

Deme Sanctuaries

Conclusions

FURTHER READING

REFERENCES

CHAPTER 14: Inscribing Construction

Introduction

Building by Committee

Syngraphai

Works in Progress

Accounting

Inscriptions: Paper, Chisel, and Stone

FURTHER READING

REFERENCES

CHAPTER 15: The Interiors of Greek Temples

Light in the Interiors

Organization of Space

The Articulation and Placement of Interior Columns

Interior Stairs, Attics, and Basements

Cult Images

Reflecting Pools

Paintings and Votive Statues

Furnishings

Dedicated Vessels, Money, and Gold

Temples as Museums

Security

Rituals inside Temples

Visitors

FURTHER READING

REFERENCES

CHAPTER 16: Scale, Architects, and Architectural Theory

Scale Representation, Vision, and Architects

Construction Phases of the Didymaion

Theory, Nature, and Architecture

Metrology and Modularity in the Didymaion

Scale and Planning

Architects and Theory

FURTHER READING

REFERENCES

PART III: Civic Space

CHAPTER 17: Urban Planning and Infrastructure

Urban Planning

Stoas

Roads and Streets

Water Supply and Fountains

FURTHER READING

REFERENCES

CHAPTER 18: Protection and Trade

Early Greek Walled Cities

Circuits and Masonry Techniques in the Archaic Period

Transition in Design of Circuits in the Classical Period

The Late Classical Period on the Greek Mainland

Hellenistic Fortifications

Harbors

Ship Sheds

FURTHER READING

REFERENCES

CHAPTER 19: The Architecture of Greek Houses

Construction and Materials

Houses and the Urban Environment

The Planning and Layout of the Greek House

Developments in the Late Classical and Hellenistic Periods

FURTHER READING

REFERENCES

CHAPTER 20: Hellenistic Royal Palaces

Basileia

The Palace at Vergina

The Palace at Pella

Alexander's Mobile Palace: the "Tent of One Hundred Couches"

The Palace at Alexandria

The Ptolemaic River Boat Palace

The Palace at Demetrias

The Palace at Pergamon

FURTHER READING

REFERENCES

CHAPTER 21: The Greek Agora

Origins

City Planning and Urban Design

Stoas

Fountains and Water

Civic Life and Politics

Commerce

Cult, Religion, and Festivals

Athletic Competition

Military Activity

Memorial Display and Public Honors

Conclusions

FURTHER READING

REFERENCES

CHAPTER 22: Athletics

Introduction

Footraces: Dromos and Stadion

Training and Wrestling: Gymnasia and Palaistra

Equestrian Events: the Hippodrome

Conclusions

FURTHER READING

REFERENCES

CHAPTER 23: Greek Baths

Introduction

History of the Study of Greek Baths

Early Greek Baths

Western Greek Baths

Greek Baths in Egypt

Later Hellenistic Baths in Greece

FURTHER READING

REFERENCES

CHAPTER 24: Bouleuteria and Odeia

Bouleuteria

Odeia

Two Athenian Odeia

Enigmatic Buildings

Setting

Seating Capacity

Roofing

Summary

Further Research

Compendium

Appendix: Recently Excavated and/or Published
Bouleuteria/Odeia

FURTHER READING

REFERENCES

CHAPTER 25: The Greek Theater

Form: Space, Plan, and Design

Function: Use and Purpose

Economy, Geometry, and Multiplicity: Moving beyond
Dramatic Performance

FURTHER READING

REFERENCES

CHAPTER 26: Commemorating the Dead

Grave Markers

Tombs and Tomb Paintings

FURTHER READING

REFERENCES

PART IV: Reception

CHAPTER 27: The Spread of Greek Architecture

Pre-Hekatomnid Caria

Pre-Hekatomnid Labraunda

Hekatomnid Caria

The Hekatomnid Sanctuary at Labraunda

Andron B

North Stoa

Temple

Andron A

Oikoi

South and East Propyla

Doric Building, “Magazine Building,” and East Stoa

Architectural Significance and Impact

FURTHER READING

REFERENCES

CHAPTER 28: Pergamon and Pergamene Influence

Pergamon and Its Phases of Construction

The Pergamene Aesthetics of Space

The Royal District

The Great Altar

Pergamene Architecture outside Pergamon

ACKNOWLEDGEMENTS

FURTHER READING

REFERENCES

CHAPTER 29: New Directions in Hellenistic Sanctuaries

The Offset Axis: The Sanctuary of Athena Lindia,
Rhodes

The Bent Axis: The Sanctuary of Asklepios at Kos

The Intentionally Circuitous: The Sanctuary of the Great
Gods on Samothrace

Smaller-Scale Urban and Suburban Precincts: Priene,
Megalopolis, and Pergamon

Hellenistic Interventions in the Old Sanctuaries: Stoas
and Votive Monuments

Hellenistic Directions in Sacred Architectural Sculpture

Responses to the Larger Hellenistic World: The
Sanctuaries of Foreign Gods and Sanctuaries in Foreign
lands

Conclusions

FURTHER READING

REFERENCES

CHAPTER 30: Three Seaside Wonders

Seven Sights or Seven Wonders?

The Mausoleum of Halikarnassos (circa 350 BCE)

The Colossus of Rhodes
The Lighthouse of Alexandria
A Wonderful Afterlife
FURTHER READING
REFERENCES

CHAPTER 31: From Hellenistic to Roman Architecture

Chronology
Geography and Culture
Materials and Techniques
Architectural Type and Style
Patronage and Purpose
Theory and Meaning
FURTHER READING
REFERENCES

CHAPTER 32: Hellenistic Architecture in Italy: Consuetudo Italica

The Late Republic
The Power Culture of Senatorial Patronage
Public Patronage in Rome
Patronage: Centralized and Dispersed, Senatorial and Municipal
Architect and Builder
The Etrusco-Italic Tradition
New Models from Greece
The Discipline of the Greek Orders: The Hellenized Late Republican Temple
The Discipline of the Greek Orders: The Articulated Wall
The Ordering of Large Spaces: Basilica and Porticus
From Hellenistic to Roman
FURTHER READING
REFERENCES

CHAPTER 33: French Architectural Thought and the Idea of Greece

Eighteenth- and Nineteenth-Century French Views on Greek Architecture
The Rustic Hut

Evidence from Greek Buildings
From Travel to Archaeology
The Autonomy of Greece
Visual Experience of Form
Polychromy
Motion in Architecture
Conclusions
FURTHER READING
REFERENCES

CHAPTER 34: The Reception of Greek Architecture in Eighteenth-Century Britain

Introduction
Setting the Scene: Hagley Hall
The Neoclassical Mood
Antiquarianism and National Identity
Appropriating Ancient Greece
The Birth of the Greek Revival
FURTHER READING
REFERENCES

CHAPTER 35: Ancient Ruins and Their Preservation

Memory and its Preservation: Past and Present
Greece and the Preservation of Its Historical Remains
From an Empirical Approach to an Ideological One
The Ideology behind Modern Anastylis
A Case Study: the East Porch of the Parthenon
Background to Decisions Governing the Restoration of the East Porch
Procedural and Historical Concerns
Preservation of Historical Evidence
Historical Inconsistency
Which Historical Phase to Restore?
A New Approach to the Pronaos Restoration
Epilogue
FURTHER READING
REFERENCES

List of Illustrations

Map-1

Map 0.1 Greece and the Aegan.

Map 0.2 Southern Italy and Sicily.

Map 0.3 Map of Italy.

Map 0.4 Map of the Mediterranean.

Chapter 02

Figure 2.1 Eretria, first half of the eighth century BCE, plan.

Figure 2.2 Kalapodi, South temples. Architectural phases of South temples.

Figure 2.3 Aerial view of the temple at Kythnos. The “adyton” in the middle. [North at the top] (photo K. Xenikakis, 2014).

Figure 2.4 Eretria, second half of the eighth century BCE, plan.

Figure 2.5 Nikoleika, temple, reconstruction.

Figure 2.6 Soros, Sanctuary of Apollo, topographical plan.

Chapter 03

Figure 3.1 Archaic Temple of Poseidon at Isthmia, restoration shown at southwest corner. Broneer 1971: 41, fig. 54.

Figure 3.2 Temple of Demeter and Kore at Sangri, Naxos.

Figure 3.3 Old Tholos at Delphi, reconstruction.

Figure 3.4 Silhouettes of moldings, clockwise from top left: half-round above a fillet, hawksbeak, cavetto with crowning fascia, ovolo.

Chapter 04

Figure 4.1 “Roof 1,” Olympia, schematic reconstruction. (The width of the roof is unknown but was probably greater than the eight tiles rendered here.)

Figure 4.2 Proto-Corinthian roof, Corinth, schematic reconstruction. (Black-painted tiles have been omitted. The original width of the roof was greater than eight tiles.)

Figure 4.3 Aphaia Sanctuary, Aigina, Early Argive roof, schematic reconstruction. (The checkered pattern of red and

black tiles is hypothetical, as are the hatched areas. The original width of the roof was greater than eight tiles.)

Figure 4.4 Heraion at Olympia, Laconian roof, schematic reconstruction. (The restoration of hatched areas is uncertain. The original roof was about eight times wider than shown here, almost 19 m across the façade.)

Figure 4.5 Mon Repos, Corfu, Northwest Greek roof, schematic reconstructions. (The restoration of hatched areas is uncertain. The original width of the roof was greater than 13 tiles.)

Figure 4.6 Band anathyrosis: on the rabbeted shelves of Protocorinthian tiles (left), and on the joint face of the architrave from the Temple of Artemis, Corfu (right). On the tile, the raised lip runs along the free edge of the cover (left: FP 329, Corinth Museum, view of underside.)

Chapter 05

Figure 5.1 Archaic Temple of Artemis (“Kroisos Temple”) at Sardis, restored ground plan showing alternative reconstructions of adyton and opisthodomos in the east.

Figure 5.2 Sanctuary of Apollo, Didyma, Hellenistic–Roman period, restored ground plan including columns planned but never erected.

Figure 5.3 Sanctuary of Apollo, Didyma, view from northeast.

Figure 5.4 Sanctuary of Apollo, Didyma, view of frontal stairway ascending to stylobate, featuring panel-strips as found in the masonry of earlier Ionian temples as well as Lydian buildings.

Figure 5.5 Tunnel of Eupalinos, Samos, showing tunnel in section, plan, and theoretical ideal plan with a detail of this ideal plan’s convergence, according to Kienast.

Figure 5.6 Tunnel of Eupalinos, Samos, proposed multistage process of excavation, with dotted lines indicating the north–south positions of the tunnel heads before the final maneuver toward convergence in stage 4.

Chapter 06

Figure 6.1 Syracuse, Apollonion.

Figure 6.2 Selinous, Temple C, pedimental gorgoneion, after Gàbrici 1935.

Figure 6.3 Paestum, Temple of Athena.

Figure 6.4 Paestum, So-called Temple of Poseidon.

Figure 6.5 Akragas, Temple of Concord.

Chapter 07

Figure 7.1 Thorikos, Doric capital from the double Stoa, reused in the Athenian Agora, with partial guidelines for flutes preserved on bottom surface. Drawn by Argyris Petronotis. Courtesy American School of Classical Studies at Athens.

Figure 7.2 Temple of Athena, Pompeii, diagram of design process. Drawing by Rocco Leonardis.

Figure 7.3 Temple of Concord, Akragas, diagram of design process. Drawing by Rocco Leonardis.

Figure 7.4 Unfinished Temple, Segesta, diagram of design process. Drawing by Rocco Leonardis.

Figure 7.5 The Parthenon, diagram of design process. Drawing by Rocco Leonardis.

Figure 7.6 Temple of Apollo, Bassai, diagram of design process. Drawing by Rocco Leonardis.

Chapter 08

Figure 8.1 Ashlar wall construction.

Figure 8.2 Temple of Aphaia II, Aigina, view of interior.

Figure 8.3 The Parthenon, section through interior, cella wall, and colonnade.

Figure 8.4 Stoa of Eumenes, Athens, view of arched buttresses.

Figure 8.5 The Doric temple.

Figure 8.6 The Ionic temple.

Figure 8.7 Horizontal and vertical curvature in Doric architecture.

Chapter 09

Map 9.1 Map of cities with a treasury at Olympia.

Figure 9.1 Treasury terrace, Olympia, plan.

Figure 9.2 Treasury of Sikyon, Olympia.

Figure 9.3 Treasury of Megara, Olympia, corner geison and sima.

Figure 9.4 Treasury of Gela, Olympia, reconstruction of horizontal and raking simas.

Figure 9.5 Treasury of Gela, Olympia, geison.

Chapter 10

Figure 10.1 General plan of sanctuary areas at Delphi.

Figure 10.2 Model of Sanctuary of Apollo at Delphi, with labels added.

Figure 10.3 Reconstruction of the Sanctuary of Apollo at Delphi, by A. Tournaire (circa 1890).

Chapter 11

Figure 11.1 Acropolis of Athens, view of north wall, with reused blocks from the Older Parthenon and Temple of Athena Polias.

Figure 11.2 Acropolis, detail of north wall, with reused blocks from the Temple of Athena Polias.

Figure 11.3 Athenian Acropolis, reconstruction. American School of Classical Studies, Archives in the Blegen Library, Gorham P. Stevens.

Figure 11.4 Athenian Acropolis, plan. American School of Classical Studies, Archives in the Blegen Library, Gorham P. Stevens.

Figure 11.5 The Erechtheion, with Caryatid Porch overlapping the foundations of the old Temple of Athena Polias.

Figure 11.6 The Propylaia, east façade.

Figure 11.7 The Parthenon, east front.

Chapter 12

Figure 12.1 Erechtheion, watercolor depicting inlaid colored glass on columns capitals.

Figure 12.2 Representation of akroteria on a Greek building. Fragment of a Gnathian calyx-krater from Taranto, ca. 350 BC. Würzburg, Martin van Wagner Museum H4696.

Figure 12.3 Ionic capital from Athenian Agora. Restoration by Piet de Jong. Courtesy of the American School of Classical Studies, Athens.

Figure 12.4 Temple of Aphaia, Aigina, painted version of the pedimental archer.

Figure 12.5 Temple of Hera at Mon Repos, Corfu, terracotta water spouts.

Figure 12.6 Temple of Athena Nike, Athens, reconstruction of

the roof akroteria.

Figure 12.7 Parthenon, Helios driving his chariot (East Metope 14), drawing.

Chapter 13

Map 13.1 Map of Attica, with demes discussed in this article indicated.

Figure 13.1 Eleusis, view of the Telesterion.

Figure 13.2 Eleusis, state plan of the Telesterion and surrounding area.

Figure 13.3 Sounion, view of the Temple of Poseidon.

Figure 13.4 Brauron, plan of the sanctuary.

Figure 13.5 Rhamnous, plan of the Sanctuary of Themis and Nemesis.

Figure 13.6 Ikaria, plan of the site.

Chapter 14

Figure 14.1 Temple of Athena Nike (*IG I³ 35*). Courtesy of The Center for Epigraphical and Palaeographical Studies, Ohio State University, Donald Laing collection.

Chapter 15

Figure 15.1 Temple of Concord, Akragas, windows in stairwell.

Figure 15.2 Propylaia, window in Pinakothek.

Figure 15.3 Temple of Artemis, Magnesia-on-the-Maeander, blocks of pediment with epiphany windows.

Figure 15.4 Athens, Hephaisteion, interior reconstruction, drawn by Rocco Leonardis.

Figure 15.5 Temple of Apollo at Cape Zoster, view of interior.

Chapter 16

Figure 16.1 Restored ground plans of Ionian temples with “Vitruvian Man” as theoretical embodiment of modular, reduced-scale design. (a) Comparison of temples by Pytheos (Temple of Athena Polias, Priene, Late Classical, around 340 BCE) and Hermogenes (Artemision, Magnesia-on-the-Maeander, Hellenistic, around 220 BCE). (b) Temple of Dionysos, Teos, by Hermogenes, Hellenistic, third century BCE. (c) “Vitruvian Man.”

Figure 16.2 Theorem 1 of Euclid’s *Phenomena*, around 300

BCE. Above: Schematic reconstruction of the *dioptra* with axes of vision of *theoros* projected through sighting tube in horizontal mode (left) and vertical mode (right). Below: Resulting geocentric diagram with shared axes of vision along setting point of Capricorn (A), rising points of Leo (B) and Cancer (C), earthbound viewer (D), and setting point of Aquarius (E).

Figure 16.3 Sanctuary of Apollo, Didyma eastward view of the adyton from the naiskos.

Figure 16.4 Sanctuary of Apollo, Didyma, working drawing for generating entasis. (a) Restored according to L. Haselberger. (b) Shown with underpinning of 3 : 4 : 5 Pythagorean triangle *ABC*. (c) Shown with modular underpinning, wherein the maximum height of the curve (g) above the line of diminution (h) expresses the module by which the upper column radius and height of the column are measurements of 18 and 24 modules. (d) Shown with modular underpinning established by *d65–d62a* as the dimension of the maximum curvature of entasis, and *d65–d61a* as 4/3 of that measurement, establishing the unit by which the divisions of the elevation are established: base = 5, shaft = 18, *d61a–d65* = 1.

Figure 16.5 Temple of Athena Polias, Priene, northward view of stepped platform along west flank with visible curvature.

Chapter 17

Figure 17.1 Plans of stoas at uniform scale: (a) Royal Stoa (Athens); (b) Stoa of Zeus Eleutherios (Athens); (c) Stoa of Philip II (Megalopolis); (d) Stoa of Attalos II (Athens); (e) South Stoa (Corinth).

Figure 17.2 Plans of Fountains at uniform scale: (a) Southeast Fountain House (Athens); (b) Southwest Fountain House (Athens); (c) Peirene Fountain (Corinth); (d) fountain house (Perachora).

Chapter 18

Figure 18.1 Section of double face wall, elevation of wall with stone socle and mudbrick upper.

Figure 18.2 Agger or terrace wall, section view.

Figure 18.3 Polygonal masonry, Athenian Kerameikos.

Figure 18.4 West Gate with polygonal masonry, Eretria.

Figure 18.5 Curvilinear polygonal masonry from temple retaining wall, Delphi.

- Figure 18.6 Chisel face finish on ashlar string course, Larisa.
- Figure 18.7 Chain wall masonry, Aigosthena.
- Figure 18.8 Curtain wall, Messene.
- Figure 18.9 Curtain wall with towers, Gythokastro.
- Figure 18.10 View of walls, Aigosthena.
- Figure 18.11 View of walls and tower, Herakleia-by-Latmos.
- Figure 18.12 Ship shed, Naxos, plan.
- Figure 18.13 Ship shed, Naxos, reconstruction drawing.

Chapter 19

- Figure 19.1 Orraon, andron, House A, stone construction and window.
- Figure 19.2 Orraon, House A.
- Figure 19.3 Tile standard, Athenian Agora. Courtesy of The American School of Classical Studies at Athens, Agora Excavations.
- Figure 19.4 House of Mikion and Menon, Athens, plan. Courtesy of The American School of Classical Studies at Athens, Agora Excavations.
- Figure 19.5 Olynthos, House of Many Colors, plan with distribution of finds.
- Figure 19.6 Houses C and D, Residential and Industrial District, Athens, plans. Courtesy of The American School of Classical Studies at Athens, Agora Excavations.
- Figure 19.7 House of the Doric Capital, Morgantina, plan.
- Figure 19.8 House A vi.3, Olynthos.

Chapter 20

- Figure 20.1 Palace at Vergina, plan.
- Figure 20.2 Palace at Pella, plan.
- Figure 20.3 Palace at Demetrias, plan.
- Figure 20.4 Detail of mosaic floor with parakeet from the so-called Altar Room in Pergamon Palace V (Antikensammlung der Staatlichen Museen zu Berlin inv. Mos. 71).

Chapter 21

- Figure 21.1 Athenian Agora, Roman period, second century CE. Courtesy The American School of Classical Studies at Athens,

Agora Excavations.

Figure 21.2 Athenian Agora, Classical period, circa 400 BCE. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Figure 21.3 Athenian Agora, model, Classical period, circa 400 BCE. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Figure 21.4 Athenian Agora, artist's view by Peter Connolly, fifth century BCE.

Figure 21.5 Stoa Poikile, reconstruction by W.B. Dinsmoor, Jr. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Chapter 22

Figure 22.1 Curved starting line, Corinth, circa 500 BCE.

Figure 22.2 Stadium with reconstructed embankments, Olympia, circa 450 BCE.

Figure 22.3 Acropolis with theater–stadium complex, Pergamon, circa second century BCE.

Figure 22.4 View of gymnasium, Delphi, fourth century BCE, with Roman additions.

Figure 22.5 Palaistra, Olympia, second century BCE.

Figure 22.6 Mt. Lykaion, plan of location of stadium, hippodrome, and associated building in mountain meadow, fourth century BCE.

Chapter 23

Figure 23.1 North Baths, Morgantina, plan.

Figure 23.2 North Baths, Morgantina, view from east to room 9 and *tholos* (5); room 9 immersion pool at right, with opening in west wall of pool that resulted when metal *testudo* was removed in antiquity; opening filled with ancient debris.

Figure 23.3 North Baths, Morgantina, elevation of north end of room 9, with Doric column supporting entablature with mixed Doric and Ionic frieze over the immersion pool.

Figure 23.4 Baths, Taposiris Magna, plan.

Figure 23.5 Baths, Sanctuary of Asklepios, Gortys. plan.

Chapter 24

Figure 24.1 Odeion, Troy.

Figure 24.2 Bouleuterion, Miletus.

Figure 24.3 Bouleuterion, Panionion.

Figure 24.4 Odeion of Agrippa, Athens (a) ground plan, first phase (Augustan, late first century BCE); (b) cross-section, first phase (Augustan, late first century BCE), looking east.

Figure 24.5 Odeion of Herodes Atticus, Athens, circa 160 CE.

Figure 24.6 Odeion, Aphrodisias.

Figure 24.7 *Gerontikon* (Bouleuterion), Nysa.

Figure 24.8 *Ekklesiasterion* (Bouleuterion), Priene.

Chapter 25

Figure 25.1 Model of a Greek Hellenistic theater, based on the theater at Epidauros, fourth century BCE, with parts labeled.

Figure 25.2 Theater, Pergamon, view.

Figure 25.3 Theater of Dionysos, Athens, drawing and reconstruction of first phase with rectilinear orchestra and *cavea* (a–b), drawing of first phase with circular orchestra and *cavea* (c).

Figure 25.4 Theater, Epidauros, view.

Figure 25.5 Theatral area, Thorikos, plan. A–A. early retaining wall; B, C, and D. later retaining walls; E and F. banquet rooms or changing areas; G. Temple of Dionysos; H. altar.

Figure 25.6 Theatral area, Rhamnous, view of theatral area from *cavea*, looking south toward *prohedria* and orchestra.

Figure 25.7 Priene, drawing of theater in late second century BCE. .

Chapter 26

Figure 26.1 Kallithea Monument, third quarter of the fourth century BCE, Piraeus Museum.

Figure 26.2 Lion of Chaeroneia on modern pedestal, after 316 BCE.

Figure 26.3 Inscribed Ionic capital from column placed on the tomb of Archilochos on Paros. The capital dates from the sixth century, the inscription from the fourth BCE. Paros Museum.

Figure 26.4 Funerary stele of Tertia Horaria from Rheneia, Mykonos Museum. Second century BCE.

Figure 26.5 Statue of Nereid from the Nereid Monument of Xanthos. Early fourth century BCE. London, British Museum.

Figure 26.6 Vaulted crypt under the chamber tomb of Charmylos, Kos, third century BCE.

Chapter 27

Figure 27.1 Sanctuary of Zeus, Labraunda, hypothetical restored view in the late fourth century BCE. 1. South Propylon; 2. Doric Building; 3. East Propylon; 4. Magazine Building; 5. East Stoa; 6. Andron B; 7. Temple of Zeus; 8. North Stoa; 9. Oikoi; 10. Andron A; 11. Terrace Building; 12. Spring House; 13. Rock-cut Sanctuary; 14. Built Tomb.

Figure 27.2 Sanctuary of Zeus, Labraunda, hypothetical restored view in the late fourth century BCE.

Figure 27.3 Andron B at Labraunda, restored elevation, drawn by Thomas Thieme.

Figure 27.4 Architectural blocks, Andron B, Labraunda, view.

Figure 27.5 Architrave block, Andron B, Labraunda.

Chapter 28

Figure 28.1 Stoa of Attalos II, Athenian Agora.

Figure 28.2 Western side of acropolis, Pergamon, viewed from the Asklepeion.

Figure 28.3a Pergamon, plan.

Figure 28.3b Pergamon, plan of citadel.

Figure 28.4 Acropolis, Pergamon, reconstruction, after second century CE.

Figure 28.5 Great Altar of Pergamon, second century BCE.

Figure 28.6 Attalid pillar monument, Athenian Acropolis, reconstruction, late third–early second century BCE.

Chapter 29

Figure 29.1 Sanctuary of Athena Lindia, Rhodes. View of stair leading to acropolis.

Figure 29.2 Sanctuary of Athena Lindia, Rhodes. View of temple.

Figure 29.3 Sanctuary of Asklepios, Kos, restored bird's-eye view.

Figure 29.4 Sanctuary of the Great Gods, Samothrace, restored

plan. 1, 2, 3. Unidentified late Hellenistic buildings. 4. Unfinished early Hellenistic building. 5. Byzantine Fort. 6. Milesian Banquet Hall. 7, 8, 10. Dining rooms. 9. Faux Bronze Age niche. 11. Stoa. 12. Nike Monument. 13. Theater. 14. Altar Court. 15. Hieron. 16. Hall of Votive Gifts. 17. Hall of Choral Dancers. 18. Sacred Way. 19. Sacred Rock. 20. Rotunda of Arsinoe II. 21. Orthostate structure. 22. Sacristy. 23. Anaktoron. 24. Dedication of Philip III and Alexander IV. 25. Theatral Circle. 26. Propylon of Ptolemy II. 27. Southern Necropolis. 28. Doric Rotunda. 29. Neorion. 30. Stepped retaining wall. 31. Ionic Porch. 32. Hestiatorion.

Figure 29.5 Rotunda of Arsinoe II, exterior gallery parapet decorated with boukrania, rosette, and sash, the last perhaps connected specifically to the cult of the Samothracian mysteries.

Figure 29.6 Sanctuary of Demeter, Pergamon, plan.

Figure 29.7 Delos, view over houses toward the Sanctuary of Apollo, with the Stoa of Philip V and South Stoa framing a processional way at center right.

Chapter 30

Figure 30.1 Mausoleum of Halikarnassos, inner foundations, Bodrum, Turkey.

Figure 30.2 Nereid Monument, Xanthos, reconstruction in the British Museum.

Figure 30.3 Portrait of a Carian man (Maussollos?), Mausoleum of Halikarnassos, British Museum.

Figure 30.4 Antonio Tempesta, *The Colossus of Rhodes*. Etching from *Septem Orbis Amiranda*, 1608. Los Angeles County Museum of Art, Department of Prints and Drawings, Los Angeles County Fund (65.37.290).

Figure 30.5 Roman Mosaic of the Pharos Lighthouse, Alexandria. Qasr Libya Museum, Libya.

Chapter 31

Figure 31.1 Temple of Artemis Leukophyrene, Magnesia-on-the-Maeander, plan.

Figure 31.2 Temple of Artemis Leukophyrene, Magnesia-on-the-Maeander, reconstructed drawing of front elevation.

Figure 31.3 Temple of Rome and Augustus, Ancyra, plan.

Figure 31.4 Temple of Rome and Augustus, Ancyra, restored

view of exterior.

Figure 31.5 Imperial Temple, Pisidian Antioch, plan.

Figure 31.6 Imperial Temple, Pisidian Antioch, view from east, looking west.

Chapter 32

Figure 32.1 Sanctuary of Fortuna Primigenia, Praeneste, circa 130/110 BCE, reconstruction. Drawn by Thomas N. Howe, adapted from Boethius and Ward-Perkins 1970: figs. 78, 142.

Figure 32.2 Via Cassia relief. The relief portrays what appears to be a senatorial *curator* (right, seated) supervising a construction project. The architect is portrayed twice, with a scroll in his hand.

Figure 32.3 Campus Martius, as in mid-first century BCE, plan. 1. Theater and Porticus of Pompey; 2. Largo Argentina Temples and Porticus Minucia Vetus? (l. to r.: temples D through A); 3. Temple of the Nymphs? and Porticus Minucia Frumentaria? 4. Diribitorium; 5. Saepta Julia; 6. Theater of Balbus; 7. Temple of Neptune and Porticus Octavia; 8. Temple of Hercules Musarum and Porticus Philippi; 9. Temples of Juno Regina (u.) and Jupiter Stator (l.), and Porticus Metelli (later Octaviae); 10. Circus Flaminius; 11. Theater of Marcellus; 12. Temple of Apollo Medicus or in Campo; 13. Temple of Bellona; 14. Forum Holitorium temple and porticus; 15. Porta Triumphalis and Porta Carmentalis; 16. Temples of Fortuna and Mater Matuta, with arches of L. Stertinus; 17. Forum Boarium; 18. Temple of Portunus (prostyle temple, r.) and Temple of Hercules Olivarius (round temple, l.); 19. Ara Maxima Herculis; 20. Temple of Hercules Olivarius; 21. Toward the Porta Trigimena and Porticus Aemilia; 22. Circus Maximus; 23. Forum Romanum, NW end, with temples of Saturn and Concord and Tabularium; 24. Capitolium with Temples of Jupiter Optimus Maximus, Fides and the Tensarium; 25. Arx, with Temple of Juno Moneta; 26. Via Flaminia with Porta Fontinalis, and porticus; 27. Altar of Mars; 28. Villa Publica.

Figure 32.4 Forum Romanum, second century BCE.

Figure 32.5 Temple of Portunus.

Figure 32.6 Tabularium, Rome, 78 BCE, reconstruction; upper story is conjectural and may have repeated the lower story.

Figure 32.7 Stabiae villas.

Chapter 33

Figure 33.1 Charles Eisen, “petite cabane rustic,” engraved by Jacques Aliamet.

Figure 33.2 “Dorique.”

Figure 33.3 Greek monuments in Athens from George Wheler, including Olympieion and Parthenon of Athens.

Figure 33.4 Julien-David Le Roy, ceiling plan of the Temple of Theseus (Hephaisteion), engraved by Jean-François de Neufforge.

Figure 33.5 Henri Labrousse, view of the temple of Hera I at Paestum or the Basilica.

Figure 33.6 Julien-David Le Roy, perspective reconstruction of the Propylaea in Athens, engraved by Pierre Patte.

Figure 33.7 Charles Garnier, reconstruction of the “Temple de Jupiter Panhellenien, île d’Egine, Grèce,” lithograph by Adolphe Levie.

Figure 33.8 Auguste Choisy, “Le Tableau des Propylées.”

Figure 33.9 Auguste Choisy, comparison of Doric orders from (A) Paestum, (B) the Parthenon (C) Olympia, (D) Pergamon.

Chapter 34

Figure 34.1 François Vivares after Thomas Smith of Derby, “A View of Hagley Park, belonging to Sir Thomas Lyttelton Bart,” 1748, engraving, 38.7 × 54.9 cm. .

Figure 34.2 James Caldwell, “Hagley Hall,” circa late eighteenth century, etching and line, 15.8 × 23.8 cm. .

Figure 34.3 Giuseppe Maria Pancrazi. “Veduta del Tempio della Concordia in Agrigento come presentemente esiste ove guarda l’oriente e tramanontana | all. ill. sig. Mylord Charlemonte.”

Figure 34.4 Willey Reveley, “Temple Ruins at Paestum,” circa 1785, watercolor with pen and black ink over graphite, 36.8 × 52.1 cm.

Chapter 35

Figure 35.1 J.Ph. le Bas, “View of the Temple of Minerva in Athens,” 1758.

Figure 35.2 Th. du Moncel, “The Propylaia with the Frankish Tower and Athena Nike temple restored by Ross,” 1843.

Figure 35.3 Parthenon, Athens. Pronaos indicated in grey.

Figure 35.4 Pronaos before any restoration, 1930.

Figure 35.5 Korres' proposal for partial restoration of Pronaos, 1989.

Figure 35.6a Bouras' proposal for partial restoration of Pronaos 1994, East elevation.

Figure 35.6b Bouras' proposal for partial restoration of Pronaos 1994, West elevation.

Figure 35.7 Implementation of Korres-Bouras' proposal for partial restoration of Pronaos 2004, view from southeast.

Figure 35.8 Implementation of Korres-Bouras' proposal for partial restoration of Pronaos 2004, view from northwest.

Figure 35.9 Pronaos of Parthenon, view from southwest.

Glossary

Figure G.1 The Doric Order, with parts labeled. Drawing by Rocco Leonardis.

Figure G.2 The Ionic Order, with parts labeled. Drawing by Rocco Leonardis.

Figure G.3 Temple E at Selinous, plan, with parts labeled.

BLACKWELL COMPANIONS TO THE ANCIENT WORLD

This series provides sophisticated and authoritative overviews of periods of ancient history, genres of classical literature, and the most important themes in ancient culture. Each volume comprises approximately twenty-five and forty concise essays written by individual scholars within their area of specialization. The essays are written in a clear, provocative, and lively manner, designed for an international audience of scholars, students, and general readers.

ANCIENT HISTORY

Published

A Companion to the Roman Army

Edited by Paul Erdkamp

A Companion to the Roman Republic

Edited by Nathan Rosenstein and Robert Morstein-Marx

A Companion to the Roman Empire

Edited by David S. Potter

A Companion to the Classical Greek World

Edited by Konrad H. Kinzl

A Companion to the Ancient Near East

Edited by Daniel C. Snell

A Companion to the Hellenistic World

Edited by Andrew Erskine

A Companion to Late Antiquity

Edited by Philip Rousseau

A Companion to Ancient History

Edited by Andrew Erskine

A Companion to Archaic Greece

Edited by Kurt A. Raaflaub and Hans van Wees

A Companion to Julius Caesar

Edited by Miriam Griffin

A Companion to Byzantium

Edited by Liz James

A Companion to Ancient Egypt

Edited by Alan B. Lloyd

A Companion to Ancient Macedonia

Edited by Joseph Roisman and Ian Worthington

A Companion to the Punic Wars

Edited by Dexter Hoyos

A Companion to Augustine

Edited by Mark Vessey

A Companion to Marcus Aurelius

Edited by Marcel van Ackeren

A Companion to Ancient Greek Government

Edited by Hans Beck

A Companion to the Neronian Age

Edited by Emma Buckley and Martin T. Dinter

A Companion to Greek Democracy and the Roman Republic

Edited by Dean Hammer

A Companion to Livy

Edited by Bernard Mineo

A Companion to Ancient Thrace

Edited by Julia Valeva, Emil Nankov, and Denver Graninger

A Companion to Roman Italy

Edited by Alison E. Cooley

A Companion to the Etruscans

Edited by Sinclair Bell and Alexandra A. Carpino

A Companion to the Flavian Age of Imperial Rome

Edited by Andrew Zissos

A Companion to Science, Technology, and Medicine in Ancient Greece and Rome

Edited by Georgia L. Irby

LITERATURE AND CULTURE

A Companion to Classical Receptions

Edited by Lorna Hardwick and Christopher Stray

A Companion to Greek and Roman Historiography

Edited by John Marincola

A Companion to Catullus

Edited by Marilyn B. Skinner

A Companion to Roman Religion

Edited by Jörg Rüpke

A Companion to Greek Religion

Edited by Daniel Ogden

A Companion to the Classical Tradition

Edited by Craig W. Kallendorf

A Companion to Roman Rhetoric

Edited by William Dominik and Jon Hall

A Companion to Greek Rhetoric

Edited by Ian Worthington

A Companion to Ancient Epic

Edited by John Miles Foley

A Companion to Greek Tragedy

Edited by Justina Gregory

A Companion to Latin Literature

Edited by Stephen Harrison

A Companion to Greek and Roman Political Thought

Edited by Ryan K. Balot

A Companion to Ovid

Edited by Peter E. Knox

A Companion to the Ancient Greek Language

Edited by Egbert Bakker

A Companion to Hellenistic Literature

Edited by Martine Cuypers and James J. Clauss

A Companion to Vergil's *Aeneid* and its Tradition

Edited by Joseph Farrell and Michael C. J. Putnam

A Companion to Horace

Edited by Gregson Davis

A Companion to Families in the Greek and Roman Worlds

Edited by Beryl Rawson

A Companion to Greek Mythology

Edited by Ken Dowden and Niall Livingstone

A Companion to the Latin Language

Edited by James Clackson

A Companion to Tacitus

Edited by Victoria Emma Pagán

A Companion to Women in the Ancient World

Edited by Sharon L. James and Sheila Dillon

A Companion to Sophocles

Edited by Kirk Ormand

A Companion to the Archaeology of the Ancient Near East

Edited by Daniel Potts

A Companion to Roman Love Elegy

Edited by Barbara K. Gold

A Companion to Greek Art

Edited by Tyler Jo Smith and Dimitris Plantzos

A Companion to Persius and Juvenal

Edited by Susanna Braund and Josiah Osgood

A Companion to the Archaeology of the Roman Republic

Edited by Jane DeRose Evans

A Companion to Terence

Edited by Antony Augoustakis and Ariana Traill

A Companion to Roman Architecture

Edited by Roger B. Ulrich and Caroline K. Quenemoen

A Companion to Sport and Spectacle in Greek and Roman Antiquity

Edited by Paul Christesen and Donald G. Kyle

A Companion to Plutarch

Edited by Mark Beck

A Companion to Greek and Roman Sexualities

Edited by Thomas K. Hubbard

A Companion to the Ancient Novel

Edited by Edmund P. Cueva and Shannon N. Byrne

A Companion to Ethnicity in the Ancient Mediterranean

Edited by Jeremy McInerney

A Companion to Ancient Egyptian Art

Edited by Melinda Hartwig

A Companion to the Archaeology of Religion in the Ancient World

Edited by Rubina Raja and Jörg Rüpke

A Companion to Food in the Ancient World

Edited by John Wilkins and Robin Nadeau

A Companion to Ancient Education

Edited by W. Martin Bloomer

A Companion to Ancient Aesthetics

Edited by Pierre Destrée & Penelope Murray

A Companion to Roman Art

Edited by Barbara Borg

A Companion to Greek Literature

Edited by Martin Hose and David Schenker

A Companion to Josephus in his World

Edited by Honora Howell Chapman and Zuleika Rodgers

A Companion to Greek Architecture

Edited by Margaret M. Miles

A COMPANION TO GREEK ARCHITECTURE

Edited by

Margaret M. Miles

WILEY Blackwell

This edition first published 2016
© 2016 John Wiley & Sons, Inc.

Registered Office

John Wiley & Sons, Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ,
UK

Editorial Offices

350 Main Street, Malden, MA 02148-5020, USA

9600 Garsington Road, Oxford, OX4 2DQ, UK

The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK

For details of our global editorial offices, for customer services, and for information about how to apply for permission to reuse the copyright material in this book please see our website at www.wiley.com/wiley-blackwell.

The right of Margaret M. Miles to be identified as the author of the editorial material in this work has been asserted in accordance with the UK Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, except as permitted by the UK Copyright, Designs and Patents Act 1988, without the prior permission of the publisher.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books.

Designations used by companies to distinguish their products are often claimed as trademarks. All brand names and product names used in this book are trade names, service marks, trademarks or registered trademarks of their respective owners. The publisher is not associated with any product or vendor mentioned in this book.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. It is sold on the understanding that the publisher is not engaged in rendering professional services and neither the publisher nor the author shall be liable for damages arising herefrom. If professional advice or other expert assistance is required, the services of a competent professional should be sought.

Library of Congress Cataloging-in-Publication Data

Names: Miles, Margaret Melanie, editor.

Title: A companion to Greek architecture / edited by Margaret M. Miles.

Other titles: Blackwell companions to the ancient world.

Description: Chichester, West Sussex : John Wiley & Sons, Inc., 2016. | Series: Blackwell companions to the ancient world | Includes bibliographical references and index.

Identifiers: LCCN 2016002812 (print) | LCCN 2016004198 (ebook) | ISBN 9781444335996 (cloth) | ISBN 9781118327616 (pdf) | ISBN 9781118327609 (epub)

Subjects: LCSH: Architecture, Greek.

Classification: LCC NA270 .C64 2016 (print) | LCC NA270 (ebook) | DDC 720.9495--dc23

LC record available at <http://ccn.loc.gov/2016002812>

A catalogue record for this book is available from the British Library.

Cover image: Temple E (Hera) at Selinous. Photo M.M. Miles

Preface

Plutarch's resonant comments on the temples of the Athenian Acropolis are quoted often because they ring true: "although they were built in a short time, they were made for all time. As for beauty, each of them was immediately venerable, and yet each looks even now as if it were just recently finished: thus each blooms with freshness, untouched by time, as though evergreen vitality and ageless spirit had been mingled into their creation" (Plut. *Per.* 13.3). Plutarch was writing some 600 years after their construction, and despite the cranes and scaffolding of recent conservation, his description is still apt. Yet the "ageless spirit" he encountered on the Acropolis is infused into much of Greek architecture across the Mediterranean. Readers wishing to investigate that spirit, and the background, context and impact of these buildings, will find some explanations and histories in the essays collected here.

This is an exciting time to study Greek architecture because so much new information and many new buildings have been brought to light in excavations. New computer-driven technologies improve the accuracy of documentation and greatly enhance reconstruction, so we can understand the original appearance of the buildings much better than ever before. Historical study of inscriptions and archaeological evidence has refined our understanding of the social and religious contexts of the buildings so that the many motives that drove their construction may be interpreted ever more persuasively. Much more remains to be done: an astonishing number of temples, stoas, theaters, and other buildings have never been properly measured and recorded, or even fully excavated. This is still a young field of investigation, building on a deep and admirable foundation laid by two and half centuries of previous study.

The editor of a volume with so many authors inevitably will owe debts to many colleagues and friends: I wish to express my wholehearted appreciation to my coauthors for their generosity in providing these essays and many original images, and for their patience. And on behalf of the authors whose work is collected here, I extend warm thanks to the many excavations, ministries, museums, and research institutes that provided us with photographs and drawings, in Greece, Italy, France, Germany, Turkey, Egypt, the United Kingdom, and the United States. I offer personal thanks to the staff and students of the American School of Classical Studies at Athens, where this volume was begun while I was the Andrew W. Mellon Professor of Classical Studies. I am also grateful to Blackwell's Copyeditor Felicity Marsh and Production Editor Vimali Joseph, and to Dylan K. Rogers, of the

University of Virginia and the American School in Athens, for his invaluable help with the editorial process.

Margaret M. Miles
Irvine, California

List of Illustrations

Figure 2.1	Eretria, first half of the eighth century bce, plan. <i>Source</i> : adapted from Verdan 2013, pl. 7.
Figure 2.2	Kalapodi, South temples. Architectural phases of South temples. <i>Source</i> : DAI, courtesy W.-D. Niemeier.
Figure 2.3	Aerial view of the temple at Kythnos. The “adyton” in the middle. [North at the top] (photo K. Xenikakis, 2014) <i>Source</i> : A. Mazarakis Ainian.
Figure 2.4	Eretria, second half of the eighth century bce, plan. <i>Source</i> : adapted from Verdan 2013, pl. 8.
Figure 2.5	Nikoleika, temple, reconstruction. <i>Source</i> : adapted from Kolia 2011, fig. 46.
Figure 2.6	Soros, Sanctuary of Apollo, topographical plan. <i>Source</i> : A. Mazarakis Ainian, G. Chiotis.
Figure 3.1	Archaic Temple of Poseidon at Isthmia, restoration shown at southwest corner. Broneer 1971: 41, fig. 54. <i>Source</i> : Courtesy the Trustees of the American School of Classical Studies at Athens.
Figure 3.2	Temple of Demeter and Kore at Sangri, Naxos. <i>Source</i> : B. Barletta.
Figure 3.3	Old Tholos at Delphi, reconstruction. <i>Source</i> : Pomtow 1911: 197, fig. 25.
Figure 3.4	Silhouettes of moldings, clockwise from top left: half-round above a fillet, hawksbeak, cavetto with crowning fascia, ovolo. <i>Source</i> : B. Barletta.
Figure 4.1	“Roof 1,” Olympia, schematic reconstruction. (The width of the roof is unknown but was probably greater than the eight tiles rendered here.) <i>Source</i> : P. Sapirstein.
Figure 4.2	Proto-Corinthian roof, Corinth,

	schematic reconstruction. (Black-painted tiles have been omitted. The original width of the roof was greater than eight tiles.) <i>Source</i>: P. Sapiststein.
Figure 4.3	Aphaia Sanctuary, Aigina, Early Argive roof, schematic reconstruction. (The checkered pattern of red and black tiles is hypothetical, as are the hatched areas. The original width of the roof was greater than eight tiles.) <i>Source</i>: P. Sapiststein.
Figure 4.4	Heraion at Olympia, Laconian roof, schematic reconstruction. (The restoration of hatched areas is uncertain. The original roof was about eight times wider than shown here, almost 19 m across the façade.) <i>Source</i>: P. Sapiststein.
Figure 4.5	Mon Repos, Corfu, Northwest Greek roof, schematic reconstructions. (The restoration of hatched areas is uncertain. The original width of the roof was greater than 13 tiles.) <i>Source</i>: P. Sapiststein.
Figure 4.6	Band anathyrosis: on the rabbeted shelves of Protocorinthian tiles (left), and on the joint face of the architrave from the Temple of Artemis, Corfu (right). On the tile, the raised lip runs along the free edge of the cover (left: FP 329, Corinth Museum, view of underside.) <i>Source</i>: P. Sapiststein.
Figure 5.1	Archaic Temple of Artemis (“Kroisos Temple”) at Sardis, restored ground plan showing alternative reconstructions of adyton and opisthodomos in the east. <i>Source</i>: J. Senseney, adapted from Ohnesorg 2007: pl. 36.
Figure 5.2	Sanctuary of Apollo, Didyma, Hellenistic–Roman period, restored ground plan including columns planned but never erected. <i>Source</i>: J. Senseney.

Figure 5.3	Sanctuary of Apollo, Didyma, view from northeast. <i>Source</i> : J. Senseney.
Figure 5.4	Sanctuary of Apollo, Didyma, view of frontal stairway ascending to stylobate, featuring panel-strips as found in the masonry of earlier Ionian temples as well as Lydian buildings. <i>Source</i> : J. Senseney.
Figure 5.5	Tunnel of Eupalinos, Samos, showing tunnel in section, plan, and theoretical ideal plan with a detail of this ideal plan's convergence, according to Kienast. <i>Source</i> : J. Senseney, adapted from Kienast 1995: fig. 46a, foldout plans 3a and 3b.
Figure 5.6	Tunnel of Eupalinos, Samos, proposed multistage process of excavation, with dotted lines indicating the north-south positions of the tunnel heads before the final maneuver toward convergence in stage 4. <i>Source</i> : J. Senseney, adapted from Kienast 1995: foldout plans 3a and 3b.
Figure 6.1	Syracuse, Apollonion. <i>Source</i> : C. Marconi.
Figure 6.2	Selinous, Temple C, pedimental gorgoneion, after Gàbrici 1935. <i>Source</i> : C. Marconi.
Figure 6.3	Paestum, Temple of Athena. <i>Source</i> : C. Marconi.
Figure 6.4	Paestum, So-called Temple of Poseidon. <i>Source</i> : C. Marconi.
Figure 6.5	Akragas, Temple of Concord. <i>Source</i> : C. Marconi.
Figure 7.1	Thorikos, Doric capital from the double Stoa, reused in the Athenian Agora, with partial guidelines for flutes preserved on bottom surface. Drawn by Argyris Petronotis. Courtesy American School of Classical Studies at Athens. <i>Source</i> : Agora Excavations, Athens.
Figure 7.2	Temple of Athena, Pompeii, diagram of design process. Drawing by Rocco

	Leonardis.
Figure 7.3	Temple of Concord, Akragas, diagram of design process. Drawing by Rocco Leonardis.
Figure 7.4	Unfinished Temple, Segesta, diagram of design process. Drawing by Rocco Leonardis.
Figure 7.5	The Parthenon, diagram of design process. Drawing by Rocco Leonardis.
Figure 7.6	Temple of Apollo, Bassai, diagram of design process. Drawing by Rocco Leonardis.
Figure 8.1	Ashlar wall construction. <i>Source</i> : N. Klein.
Figure 8.2	Temple of Aphaia II, Aigina, view of interior. <i>Source</i> : N. Klein.
Figure 8.3	The Parthenon, section through interior, cella wall, and colonnade. <i>Source</i> : N. Klein.
Figure 8.4	Stoa of Eumenes, Athens, view of arched buttresses. <i>Source</i> : N. Klein.
Figure 8.5	The Doric temple. <i>Source</i> : N. Klein.
Figure 8.6	The Ionic temple. <i>Source</i> : N. Klein.
Figure 8.7	Horizontal and vertical curvature in Doric architecture. <i>Source</i> : N. Klein.
Figure 9.1	Treasury terrace, Olympia, plan. <i>Source</i> : N. Klein, adapted from Herrmann 1992.
Figure 9.2	Treasury of Sikyon, Olympia. <i>Source</i> : N. Klein.
Figure 9.3	Treasury of Megara, Olympia, corner geison and sima. <i>Source</i> : N. Klein.
Figure 9.4	Treasury of Gela, Olympia, reconstruction of horizontal and raking simas. <i>Source</i> : N. Klein.
Figure 9.5	Treasury of Gela, Olympia, geison. <i>Source</i> : N. Klein.
Figure 10.1	General plan of sanctuary areas at Delphi. <i>Source</i> : M. Scott.
Figure 10.2	Model of Sanctuary of Apollo at Delphi, with labels added. <i>Source</i> : M. Scott.
Figure 10.3	Reconstruction of the Sanctuary of Apollo at Delphi, by A. Tournaire

	(circa 1890). <i>Source</i> : M. Scott.
Figure 11.1	Acropolis of Athens, view of north wall, with reused blocks from the Older Parthenon and Temple of Athena Polias. <i>Source</i> : M.M. Miles.
Figure 11.2	Acropolis, detail of north wall, with reused blocks from the Temple of Athena Polias. <i>Source</i> : M.M. Miles.
Figure 11.3	Athenian Acropolis, reconstruction. American School of Classical Studies, Archives in the Blegen Library, Gorham P. Stevens. <i>Source</i> : American School of Classical Studies at Athens.
Figure 11.4	Athenian Acropolis, plan. American School of Classical Studies, Archives in the Blegen Library, Gorham P. Stevens. <i>Source</i> : American School of Classical Studies at Athens.
Figure 11.5	The Erechtheion, with Caryatid Porch overlapping the foundations of the old Temple of Athena Polis. <i>Source</i> : M.M. Miles.
Figure 11.6	The Propylaia, east façade. <i>Source</i> : M.M. Miles.
Figure 11.7	The Parthenon, east front. <i>Source</i> : M.M. Miles.
Figure 12.1	Erechtheion, watercolor depicting inlaid colored glass on columns capitals. <i>Source</i> : adapted from T.L. Donaldson, 1820 (British Museum 1857, 1212.10).
Figure 12.2	Representation of akroteria on a Greek building. Fragment of a Gnathian calyx-krater from Taranto, ca. 350 bc. Würzburg, Martin van Wagner Museum H4696. <i>Source</i> : © Martin von Wagner Museum der Universität Würzburg, Photo: P. Neckermann.
Figure 12.3	Ionic capital from Athenian Agora. Restoration by Piet de Jong. Courtesy of the American School of Classical Studies, Athens. <i>Source</i> : Agora Excavations.
Figure 12.4	Temple of Aphaia, Aigina, painted

version of the pedimental archer.
Source: Bibi Saint-Pol, http://commons.wikimedia.org/wiki/File:Aphaia_pediment_polychrome_model_VXI_Glyptothek_Munich.jpg. CC public domain.

Figure 12.5	Temple of Hera at Mon Repos, Corfu, terracotta water spouts. <i>Source:</i> P. Sapiststein.
Figure 12.6	Temple of Athena Nike, Athens, reconstruction of the roof akroteria. <i>Source:</i> P. Schultz.
Figure 12.7	Parthenon, Helios driving his chariot (East Metope 14), drawing. <i>Source:</i> K. Schwab.
Figure 13.1	Eleusis, view of the Telesterion. <i>Source:</i> J. Paga.
Figure 13.2	Eleusis, state plan of the Telesterion and surrounding area. From Travlos 1988, fig. 172. © The Archaeological Society at Athens.
Figure 13.3	Sounion, view of the Temple of Poseidon. <i>Source:</i> J. Paga.
Figure 13.4	Brauron, plan of the sanctuary. From Travlos 1988, fig. 58. © The Archaeological Society at Athens.
Figure 13.5	Rhamnous, plan of the Sanctuary of Themis and Nemesis. From Petrakos 1999, fig. 105. © The Archaeological Society at Athens.
Figure 13.6	Ikaria, plan of the site. From Biers and Boyd 1982, fig. 1. © The American School of Classical Studies at Athens.
Figure 14.1	Temple of Athena Nike (<i>IG</i> I ³ 35). Courtesy of The Center for Epigraphical and Palaeographical Studies, Ohio State University, Donald Laing collection.
Figure 15.1	Temple of Concord, Akragas, windows in stairwell. <i>Source:</i> M.M. Miles.
Figure 15.2	Propylaia, window in Pinakotheke. <i>Source:</i> M.M. Miles.
Figure 15.3	Temple of Artemis, Magnesia-on-the-

Maeander, blocks of pediment with epiphany windows. *Source*: M.M. Miles.

Figure 15.4

Athens, Hephaisteion, interior reconstruction, drawn by Rocco Leonardis. *Source*: M.M. Miles.

Figure 15.5

Temple of Apollo at Cape Zoster, view of interior. *Source*: M.M. Miles.

Figure 16.1

Restored ground plans of Ionian temples with “Vitruvian Man” as theoretical embodiment of modular, reduced-scale design. (a) Comparison of temples by Pytheos (Temple of Athena Polias, Priene, Late Classical, around 340 bce) and Hermogenes (Artemision, Magnesia-on-the-Maeander, Hellenistic, around 220 bce). (b) Temple of Dionysos, Teos, by Hermogenes, Hellenistic, third century bce. (c) “Vitruvian Man.” *Source*: J. Senseney, with Figure 16.1A adapted from Coulton 1977: fig. 23.

Figure 16.2

Theorem 1 of Euclid’s *Phenomena*, around 300 bce. Above: Schematic reconstruction of the *dioptra* with axes of vision of *theoros* projected through sighting tube in horizontal mode (left) and vertical mode (right). Below: Resulting geocentric diagram with shared axes of vision along setting point of Capricorn (A), rising points of Leo (B) and Cancer (C), earthbound viewer (D), and setting point of Aquarius (E). *Source*: J. Senseney.

Figure 16.3

Sanctuary of Apollo, Didyma eastward view of the adyton from the naiskos. *Source*: J. Senseney.

Figure 16.4

Sanctuary of Apollo, Didyma, working drawing for generating entasis. (a) Restored according to L. Haselberger. (b) Shown with underpinning of 3 : 4 : 5 Pythagorean triangle *ABC*. (c) Shown with modular underpinning,

wherein the maximum height of the curve (g) above the line of diminution (h) expresses the module by which the upper column radius and height of the column are measurements of 18 and 24 modules. (d) Shown with modular underpinning established by $d65-d62a$ as the dimension of the maximum curvature of entasis, and $d65-d61a$ as $4/3$ of that measurement, establishing the unit by which the divisions of the elevation are established: base = 5, shaft = 18, $d61a-d65 = 1$. *Source*: J. Senseney, adapted from Haselberger 1980: fig. 1.

Figure 16.5

Temple of Athena Polias, Priene, northward view of stepped platform along west flank with visible curvature. *Source*: J. Senseney.

Figure 17.1

Plans of stoas at uniform scale: (a) Royal Stoa (Athens); (b) Stoa of Zeus Eleutherios (Athens); (c) Stoa of Philip II (Megalopolis); (d) Stoa of Attalos II (Athens); (e) South Stoa (Corinth). *Source*: adapted from Coulton 1976, used with permission of Oxford University Press.

Figure 17.2

Plans of Fountains at uniform scale: (a) Southeast Fountain House (Athens); (b) Southwest Fountain House (Athens); (c) Peirene Fountain (Corinth); (d) fountain house (Perachora). *Source*: (a–b) adapted from Travlos, used with permission of American School of Classical Studies at Athens; © B. Robinson; (d) adapted from Tomlinson 1979, used with permission of the British School at Athens.

Figure 18.1

Section of double face wall, elevation of wall with stone socle and mudbrick upper. *Source*: S. Huisbrink, used with permission.

Figure 18.2

Agger or terrace wall, section view.

	<i>Source:</i> S. Huisbrink, used with permission.
Figure 18.3	Polygonal masonry, Athenian Kerameikos. <i>Source:</i> S. Pope.
Figure 18.4	West Gate with polygonal masonry, Eretria. <i>Source:</i> S. Pope.
Figure 18.5	Curvilinear polygonal masonry from temple retaining wall, Delphi. <i>Source:</i> S. Pope.
Figure 18.6	Chisel face finish on ashlar string course, Larisa. <i>Source:</i> S. Pope.
Figure 18.7	Chain wall masonry, Aigosthena. <i>Source:</i> S. Pope.
Figure 18.8	Curtain wall, Messene. <i>Source:</i> S. Pope.
Figure 18.9	Curtain wall with towers, Gythokastro. <i>Source:</i> S. Pope.
Figure 18.10	View of walls, Aigosthena. <i>Source:</i> S. Pope.
Figure 18.11	View of walls and tower, Herakleia-by-Latmos. <i>Source:</i> S. Pope.
Figure 18.12	Ship shed, Naxos, plan. <i>Source:</i> Mariangela Barbato, adapted from M.C. Lentini, D. Blackman and J. Pakkanen, 2008.
Figure 18.13	Ship shed, Naxos, reconstruction drawing. <i>Source:</i> Mariangela Barbato, adapted from M.C. Lentini, D. Blackman and J. Pakkanen, 2008.
Figure 19.1	Orraon, andron, House A, stone construction and window. <i>Source:</i> B. Tsakirgis.
Figure 19.2	Orraon, House A. <i>Source:</i> M.M. Miles.
Figure 19.3	Tile standard, Athenian Agora. Courtesy of The American School of Classical Studies at Athens, Agora Excavations. <i>Source:</i> American School of Classical Studies at Athens.
Figure 19.4	House of Mikion and Menon, Athens, plan. Courtesy of The American School of Classical Studies at Athens, Agora Excavations. <i>Source:</i> American School of Classical Studies at Athens.
Figure 19.5	Olynthos, House of Many Colors, plan

	with distribution of finds. <i>Source</i> : Courtesy N.D. Cahill.
Figure 19.6	Houses C and D, Residential and Industrial District, Athens, plans. Courtesy of The American School of Classical Studies at Athens, Agora Excavations. <i>Source</i> : American School of Classical Studies at Athens.
Figure 19.7	House of the Doric Capital, Morgantina, plan. <i>Source</i> : American Excavations at Morgantina.
Figure 19.8	House A vi.3, Olynthos. <i>Source</i> : M.M. Miles.
Figure 20.1	Palace at Vergina, plan. <i>Source</i> : adapted from Kottaridi 2011, fig. 32a.
Figure 20.2	Palace at Pella, plan. <i>Source</i> : adapted from Chrysostomou 2011, fig. 25.
Figure 20.3	Palace at Demetrias, plan. <i>Source</i> : adapted from Batziou-Efstathiou 2002, fig. 19.
Figure 20.4	Detail of mosaic floor with parakeet from the so-called Altar Room in Pergamon Palace V (Antikensammlung der Staatlichen Museen zu Berlin inv. Mos. 71). <i>Source</i> : bpk, Berlin/ Antikensammlung/Juergen Liepe/Art Resource. NY.
Figure 21.1	Athenian Agora, Roman period, second century CE. Courtesy The American School of Classical Studies at Athens, Agora Excavations. <i>Source</i> : American School of Classical Studies at Athens.
Figure 21.2	Athenian Agora, Classical period, circa 400 bce. Courtesy The American School of Classical Studies at Athens, Agora Excavations. <i>Source</i> : American School of Classical Studies at Athens.
Figure 21.3	Athenian Agora, model, Classical period, circa 400 bce. Courtesy The American School of Classical Studies at Athens, Agora Excavations. <i>Source</i> : American School of Classical Studies

	at Athens.
Figure 21.4	Athenian Agora, artist's view by Peter Connolly, fifth century bce. <i>Source:</i> John McK. Camp.
Figure 21.5	Stoa Poikile, reconstruction by W.B. Dinsmoor, Jr. Courtesy The American School of Classical Studies at Athens, Agora Excavations. <i>Source:</i> American School of Classical Studies at Athens.
Figure 22.1	Curved starting line, Corinth, circa 500 bce. <i>Source:</i> Corinth Excavations, American School of Classical Studies at Athens.
Figure 22.2	Stadium with reconstructed embankments, Olympia, circa 450 bce. <i>Source:</i> DAI.
Figure 22.3	Acropolis with theater–stadium complex, Pergamon, circa second century bce. <i>Source:</i> H.R. Goette.
Figure 22.4	View of gymnasium, Delphi, fourth century bce, with Roman additions. <i>Source:</i> David G. Romano.
Figure 22.5	Palaistra, Olympia, second century bce. <i>Source:</i> DAI.
Figure 22.6	Mt. Lykaion, plan of location of stadium, hippodrome, and associated building in mountain meadow, fourth century bce. <i>Source:</i> Mt. Lykaion Excavation and Survey Project.
Figure 23.1	North Baths, Morgantina, plan. <i>Source:</i> E. Thorkildsen of the American Excavations at Morgantina.
Figure 23.2	North Baths, Morgantina, view from east to room 9 and <i>tholos</i> (5); room 9 immersion pool at right, with opening in west wall of pool that resulted when metal <i>testudo</i> was removed in antiquity; opening filled with ancient debris. <i>Source:</i> Sandra K. Lucore.
Figure 23.3	North Baths, Morgantina, elevation of north end of room 9, with Doric column supporting entablature with mixed Doric and Ionic frieze over the immersion pool. <i>Source:</i> E.

	Thorkildsen.
Figure 23.4	Baths, Taposiris Magna, plan. <i>Source:</i> T. Fournet.
Figure 23.5	Baths, Sanctuary of Asklepios, Gortys. plan. <i>Source:</i> T. Fournet, adapted from Ginouvès 1959.
Figure 24.1	Odeion, Troy. <i>Source:</i> J. Camp.
Figure 24.2	Bouleuterion, Miletus. <i>Source:</i> J. Camp.
Figure 24.3	Bouleuterion, Panionion. <i>Source:</i> J. Camp.
Figure 24.4	Odeion of Agrippa, Athens (a) ground plan, first phase (Augustan, late first century bce); (b) cross-section, first phase (Augustan, late first century bce), looking east. <i>Source:</i> American School of Classical Studies at Athens.
Figure 24.5	Odeion of Herodes Atticus, Athens, circa 160 ce. <i>Source:</i> J. Camp.
Figure 24.6	Odeion, Aphrodisias. <i>Source:</i> J. Camp.
Figure 24.7	<i>Gerontikon</i> (Bouleuterion), Nysa. <i>Source:</i> J. Camp.
Figure 24.8	<i>Ekklesiasterion</i> (Bouleuterion), Priene. <i>Source:</i> J. Camp.
Figure 25.1	Model of a Greek Hellenistic theater, based on the theater at Epidauros, fourth century bce, with parts labeled. <i>Source:</i> Modified from computer model created by Martin Blazeby, King's Visualization Lab, King's College London.
Figure 25.2	Theater, Pergamon, view. <i>Source:</i> J. Paga.
Figure 25.3	Theater of Dionysos, Athens, drawing and reconstruction of first phase with rectilinear orchestra and <i>cavea</i> (a–b), drawing of first phase with circular orchestra and <i>cavea</i> (c). <i>Source:</i> a–b: adapted from Anti 1947: fig. 17 (A), pl. II (B); c: Travlos 1980: fig. 677. The Archaeological Society at Athens.
Figure 25.4	Theater, Epidauros, view. <i>Source:</i> H.R. Goette.
Figure 25.5	Theatral area, Thorikos, plan. A-A.

early retaining wall; B, C, and D. later retaining walls; E and F. banquet rooms or changing areas; G. Temple of Dionysos; H. altar. *Source:* From Paga 2010: fig. 2; The Trustees of the American School of Classical Studies at Athens.

Figure 25.6

Theatral area, Rhamnous, view of theatral area from cavea, looking south toward prohedria and orchestra. *Source:* Paga 2010: fig. 8; The Trustees of the American School of Classical Studies at Athens.

Figure 25.7

Priene, drawing of theater in late second century bce. From von Gerkan 1921, pl. XXXV.

Figure 26.1

Kallithea Monument, third quarter of the fourth century bce, Piraeus Museum. *Source:* Olga Palagia.

Figure 26.2

Lion of Chaeroneia on modern pedestal, after 316 bce. *Source:* Olga Palagia.

Figure 26.3

Inscribed Ionic capital from column placed on the tomb of Archilochos on Paros. The capital dates from the sixth century, the inscription from the fourth bce. Paros Museum. *Source:* Olga Palagia.

Figure 26.4

Funerary stele of Tertia Horaria from Rheneia, Mykonos Museum. Second century bce. *Source:* Olga Palagia.

Figure 26.5

Statue of Nereid from the Nereid Monument of Xanthos. Early fourth century bce. London, British Museum. *Source:* Olga Palagia.

Figure 26.6

Vaulted crypt under the chamber tomb of Charmylos, Kos, third century bce. *Source:* Olga Palagia.

Figure 27.1

Sanctuary of Zeus, Labraunda, hypothetical restored view in the late fourth century bce. 1. South Propylon; 2. Doric Building; 3. East Propylon; 4. Magazine Building; 5. East Stoa; 6. Andron B; 7. Temple of Zeus; 8. North

	Stoa; 9. Oikoi; 10. Andron A; 11. Terrace Building; 12. Spring House; 13. Rock-cut Sanctuary; 14. Built Tomb. <i>Source</i> : C.S. Alexander, adapted from plans in Westholm 1963 and Hellström 2007.
Figure 27.2	Sanctuary of Zeus, Labraunda, hypothetical restored view in the late fourth century bce. <i>Source</i> : C.S. Alexander.
Figure 27.3	Andron B at Labraunda, restored elevation, drawn by Thomas Thieme. <i>Source</i> : Hellström 2009: 270, fig. 3.
Figure 27.4	Architectural blocks, Andron B, Labraunda. view. <i>Source</i> : G. Umholtz.
Figure 27.5	Architrave block, Andron B, Labraunda. <i>Source</i> : G. Umholtz.
Figure 28.1	Stoa of Attalos II, Athenian Agora. <i>Source</i> : K. Seaman.
Figure 28.2	Western side of acropolis, Pergamon, viewed from the Asklepeion. <i>Source</i> : K. Seaman.
Figure 28.3a	Pergamon, plan. <i>Source</i> : F. Pirson, DAI.
Figure 28.3b	Pergamon, plan of citadel. <i>Source</i> : DAI.
Figure 28.4	Acropolis, Pergamon, reconstruction, after second century ce. <i>Source</i> : Art Resource 182621.
Figure 28.5	Great Altar of Pergamon, second century bce. <i>Source</i> : Art Resource 4965.
Figure 28.6	Attalid pillar monument, Athenian Acropolis, reconstruction, late third–early second century bce. <i>Source</i> : M. Korres.
Figure 29.1	Sanctuary of Athena Lindia, Rhodes. View of stair leading to acropolis. <i>Source</i> : Bonna D. Wescoat.
Figure 29.2	Sanctuary of Athena Lindia, Rhodes. View of temple. <i>Source</i> : Bonna D. Wescoat.
Figure 29.3	Sanctuary of Asklepios, Kos, restored bird’s-eye view. <i>Source</i> : adapted from

Figure 29.4	Schazmann and Herzog 1932, pl. 40. Sanctuary of the Great Gods, Samothrace, restored plan. 1, 2, 3. Unidentified late Hellenistic buildings. 4. Unfinished early Hellenistic building. 5. Byzantine Fort. 6. Milesian Banquet Hall. 7, 8, 10. Dining rooms. 9. Faux Bronze Age niche. 11. Stoa. 12. Nike Monument. 13. Theater. 14. Altar Court. 15. Hieron. 16. Hall of Votive Gifts. 17. Hall of Choral Dancers. 18. Sacred Way. 19. Sacred Rock. 20. Rotunda of Arsinoe II. 21. Orthostate structure. 22. Sacristy. 23. Anaktoron. 24. Dedication of Philip III and Alexander IV. 25. Theatral Circle. 26. Propylon of Ptolemy II. 27. Southern Necropolis. 28. Doric Rotunda. 29. Neorion. 30. Stepped retaining wall. 31. Ionic Porch. 32. Hestiatorion. <i>Source:</i> © American Excavations, Samothrace/ J. Kurtich.
Figure 29.5	Rotunda of Arsinoe II, exterior gallery parapet decorated with boukrania, rosette, and sash, the last perhaps connected specifically to the cult of the Samothracian mysteries. <i>Source:</i> Bonna D. Wescoat.
Figure 29.6	Sanctuary of Demeter. Pergamon, plan. Drawing by Cornelia Piok Zanon. <i>Source:</i> C. Piok Zanon.
Figure 29.7	Delos, view over houses toward the Sanctuary of Apollo, with the Stoa of Philip V and South Stoa framing a processional way at center right. <i>Source:</i> M.M. Miles.
Figure 30.1	Mausoleum of Halikarnassos, inner foundations, Bodrum, Turkey. <i>Source:</i> M.M. Miles.
Figure 30.2	Nereid Monument, Xanthos, reconstruction in the British Museum. <i>Source:</i> Jastrow, https://commons.wikimedia.org/wiki/

	File:Reconstruction_Nereid_Monument_BM. CC public domain.
Figure 30.3	Portrait of a Carian man (Maussollos?), Mausoleum of Halikarnassos, British Museum. <i>Source</i>: Carole Raddato, https://commons.wikimedia.org/wiki/File:Colossal_statue_of_a_man,_traditionall_Maussollos,_king_of_Caria,_ca._350_BC,_fr_Halicarnassus,_British_Museum_(824459721) Used under CC-BY-SA 2.0. https://creativecommons.org/licenses/by-sa/2.0/.
Figure 30.4	Antonio Tempesta, <i>The Colossus of Rhodes</i>. Etching from <i>Septem Orbis Amiranda</i>, 1608. Los Angeles County Museum of Art, Department of Prints and Drawings, Los Angeles County Fund (65.37.290). <i>Source</i>: http://commons.wikimedia.org/wiki/File:%3AThe_Colossus_of_Rhodes_LACMA_65 CC public domain.
Figure 30.5	Roman Mosaic of the Pharos Lighthouse, Alexandria. Qasr Libya Museum, Libya. <i>Source</i>: © Gilles Mermet/Art Resource, NY.
Figure 31.1	Temple of Artemis Leukophyrene, Magnesia-on-the-Maeander, plan. <i>Source</i>: Humann, Kohte, and Watzinger 1904: Abb. 30.
Figure 31.2	Temple of Artemis Leukophyrene, Magnesia-on-the-Maeander, reconstructed drawing of front elevation. <i>Source</i>: Humann, Kohte, and Watzinger 1904: Abb. 32.
Figure 31.3	Temple of Rome and Augustus, Ancyra, plan. <i>Source</i>: Adapted from Krencker and Schede 1936: Abb. 10.
Figure 31.4	Temple of Rome and Augustus, Ancyra, restored view of exterior. <i>Source</i>: Adapted from Krencker and Schede 1936: Taf. 1.
Figure 31.5	Imperial Temple, Pisidian Antioch, plan. <i>Source</i>: D. Weiss, adapted from

Figure 31.6	Mitchell and Waelkens 1998: Fig. 23. Imperial Temple, Pisidian Antioch, view from east, looking west. <i>Source</i> : R.F. Townsend.
Figure 32.1	Sanctuary of Fortuna Primigenia, Praeneste, circa 130/110 bce, reconstruction. Drawn by Thomas N. Howe, adapted from Boethius and Ward-Perkins 1970: figs. 78, 142. <i>Source</i> : Thomas N. Howe.
Figure 32.2	Via Cassia relief. The relief portrays what appears to be a senatorial <i>curator</i> (right, seated) supervising a construction project. The architect is portrayed twice, with a scroll in his hand. <i>Source</i> : adapted from Adam 1989: fig. 90.
Figure 32.3	Campus Martius, as in mid-first century bce, plan. 1. Theater and Porticus of Pompey; 2. Largo Argentina Temples and Porticus Minucia Vetus? (l. to r.: temples D through A); 3. Temple of the Nymphs? and Porticus Minucia Frumentaria? 4. Diribitorium; 5. Saepta Julia; 6. Theater of Balbus; 7. Temple of Neptune and Porticus Octavia; 8. Temple of Hercules Musarum and Porticus Philippi; 9. Temples of Juno Regina (u.) and Jupiter Stator (l.), and Porticus Metelli (later Octaviae); 10. Circus Flaminius; 11. Theater of Marcellus; 12. Temple of Apollo Medicus or in Campo; 13. Temple of Bellona; 14. Forum Holitorium temple and porticus; 15. Porta Triumphalis and Porta Carmentalis; 16. Temples of Fortuna and Mater Matuta, with arches of L. Stertinus; 17. Forum Boarium; 18. Temple of Portunus (prostyle temple, r.) and Temple of Hercules Olivarius (round temple, l.); 19. Ara Maxima Herculis; 20. Temple of Hercules Olivarius; 21. Toward the

	Porta Trigimena and Porticus Aemilia; 22. Circus Maximus; 23. Forum Romanum, NW end, with temples of Saturn and Concord and Tabularium; 24. Capitolium with Temples of Jupiter Optimus Maximus, Fides and the Tensarium; 25. Arx, with Temple of Juno Moneta; 26. Via Flaminia with Porta Fontinalis, and porticus; 27. Altar of Mars; 28. Villa Publica. <i>Source</i>: digitally modified and redrawn, adapted from Stambaugh (1988: fig. 4) and Favro (1996: fig. 41).
Figure 32.4	Forum Romanum, second century bce. <i>Source</i>: adapted from Stambaugh (1988: fig. 8), redrawn by Thomas N. Howe.
Figure 32.5	Temple of Portunus. <i>Source</i>: Drawn by P. Gros, used with permission.
Figure 32.6	Tabularium, Rome, 78 bce, reconstruction; upper story is conjectural and may have repeated the lower story. <i>Source</i>: adapted from Delbrück 1907–1912: Taf. III.
Figure 32.7	Stabiae villas. <i>Source</i>: adapted from Soprintendenza Archeologica di Napoli e Pompei/Fondazione Restoring Ancient Stabiae.
Figure 33.1	Charles Eisen, “petite cabane rustic,” engraved by Jacques Aliamet. <i>Source</i>: Laugier 1755: frontispiece.
Figure 33.2	“Dorique.” <i>Source</i>: Viollet-le-Duc, <i>Entretiens sur l’architecture</i>, pl. 2.
Figure 33.3	Greek monuments in Athens from George Wheler, including Olympieion and Parthenon of Athens. <i>Source</i>: Fischer von Erlach 1721: pl. 19 (detail).
Figure 33.4	Julien-David Le Roy, ceiling plan of the Temple of Theseus (Hephaisteion), engraved by Jean-François de Neufforge. <i>Source</i>: Le Roy 1758: part 2, pl. V.

Figure 33.5	Henri Labrousse, view of the temple of Hera I at Paestum or the Basilica. <i>Source</i> : Labrousse 1877.
Figure 33.6	Julien-David Le Roy, perspective reconstruction of the Propylaea in Athens, engraved by Pierre Patte. <i>Source</i> : Le Roy 1758: part 2, pl. XIII.
Figure 33.7	Charles Garnier, reconstruction of the “Temple de Jupiter Panhellenien, île d’Egine, Grèce,” lithograph by Adolphe Levie. <i>Source</i> : Garnier 1858: pl. 24.
Figure 33.8	Auguste Choisy, “Le Tableau des Propylées.” <i>Source</i> : Choisy 1899: 414.
Figure 33.9	Auguste Choisy, comparison of Doric orders from (A) Paestum, (B) the Parthenon (C) Olympia, (D) Pergamon. <i>Source</i> : Choisy 1899: 307.
Figure 34.1	Francois Vivares after Thomas Smith of Derby, “A View of Hagley Park, belonging to Sir Thomas Lyttelton Bart,” 1748, engraving, 38.7 × 54.9 cm. <i>Source</i> : Yale Center for British Art, Paul Mellon Collection (B1978.43.1099).
Figure 34.2	James Caldwell, “Hagley Hall,” circa late eighteenth century, etching and line, 15.8 × 23.8 cm. <i>Source</i> : Yale Center for British Art, Paul Mellon Collection (B1977.14.14751).
Figure 34.3	Giuseppe Maria Pancrazi. “Veduta del Tempio della Concordia in Agrigento come presentemente esiste ove guarda l’oriente e tramanontana all. ill. sig. Mylord Charlemonte.” <i>Source</i> : 1752: pl. 13.
Figure 34.4	Willey Reveley, “Temple Ruins at Paestum,” circa 1785, watercolor with pen and black ink over graphite, 36.8 × 52.1 cm. <i>Source</i> : Yale Center for British Art, Paul Mellon Collection (B1977.14.19454).
Figure 35.1	J.Ph. le Bas, “View of the Temple of Minerva in Athens,” 1758. <i>Source</i> : Le

	Roy 1758. Reproduced by kind permission of Gennadeion Library, American School of Classical Studies in Athens.
Figure 35.2	Th. du Moncel, “The Propylaia with the Frankish Tower and Athena Nike temple restored by Ross,” 1843. <i>Source:</i> Du Moncel 1845. Reproduced by kind permission of Gennadeion Library, American School of Classical Studies in Athens.
Figure 35.3	Parthenon, Athens. Pronaos indicated in grey. <i>Source:</i> M. Korres (by permission of artist).
Figure 35.4	Pronaos before any restoration, 1930. <i>Source:</i> Balanos 1940, pl. 133.
Figure 35.5	Korres’ proposal for partial restoration of Pronaos, 1989. <i>Source:</i> Korres, YSMA Archives.
Figure 35.6a	Bouras’ proposal for partial restoration of Pronaos 1994, East elevation. <i>Source:</i> Korres-Bouras-Eleutheriou, YSMA Archives.
Figure 35.6b	Bouras’ proposal for partial restoration of Pronaos 1994, West elevation. <i>Source:</i> Korres-Bouras-Eleutheriou, YSMA Archives.
Figure 35.7	Implementation of Korres-Bouras’ proposal for partial restoration of Pronaos 2004, view from southeast. <i>Source:</i> L. Lambrinou.
Figure 35.8	Implementation of Korres-Bouras’ proposal for partial restoration of Pronaos 2004, view from northwest. <i>Source:</i> L. Lambrinou.
Figure 35.9	Pronaos of Parthenon, view from southwest. <i>Source:</i> L. Lambrinou.

Glossary

Figure G.1	The Doric Order, with parts labeled. Drawing by Rocco Leonardis.

Figure G.2

The Ionic Order, with parts labeled.

Drawing by Rocco Leonardis.

Figure G.3

Temple E at Selinous, plan, with parts labeled. *Source:* M.M. Miles.

List of Maps

Map 0.1	Greece and the Aegan. Source: Adapted from Erskine, Companion to Ancient History, map 1.
Map 0.2	Southern Italy and Sicily. Source: Rhodes, A History of the Classical World, map 2.
Map 0.3	Map of Italy.
Map 0.4	Map of the Mediterranean.
Map 9.1	Map of cities with a treasury at Olympia. Source: N. Klein.124
Map 13.1	Map of Attica, with demes discussed in this article indicated. Modified from Camp (2001), fig. 248. © Michael Djordjevitch.

Notes on Contributors

Alexander Mazarakis Ainian is professor of classical archaeology at the University of Thessaly, Volos, Greece and invited professor at Paris IV-Sorbonne. He is the director of excavations of early Iron Age sites (Oropos, Skiathos) and sanctuaries (Kythnos, Soros), as well as of underwater excavations (Kythnos). He is the author of *From Rulers' Dwellings to Temples* (1997) and *Ὅμηρος και αρχαιολογία* (Homer and Archaeology; 2000).

Christopher Drew Armstrong is associate professor and director of architectural studies in the Department of History of Art and Architecture at the University of Pittsburgh. A specialist in European art, architecture, and visual culture, he is the author of numerous articles and reviews. His book *Julien-David Leroy and the Making of Architectural History* was published by Routledge in 2011. He is currently working on a second book about material culture and collecting in the Mediterranean of Louis XV.

†**Barbara A. Barletta** was professor of classical art and archaeology at the University of Florida. Her books include *Ionic Influence in Archaic Sicily: The Monumental Art, The Origins of the Greek Architectural Orders*, and *The Sanctuary of Athena at Sounion*. She published articles and book chapters on topics ranging from western Greek sculpture to the Parthenon.

John McK. Camp II is the director of the Agora excavations in Athens, Greece, and Stavros Niarchos Foundation Professor of Classics at Randolph-Macon College. Before that he was the Andrew W. Mellon Professor at the American School of Classical Studies at Athens (1985–1996). He is the author or editor of nine books and concerns himself largely with the topography and monuments of Athens and the early traveler to Greece Edward Dodwell.

Thomas Noble Howe is professor of art and art history at Southwestern University and coordinator general of the Restoring Ancient Stabiae Foundation. His dissertation is “The Invention of the Doric Order” (Harvard University 1985), and he wrote the commentary and illustrations for a translation of the *Ten Books of Vitruvius* (1999). He is the coauthor of a report on the discovery of the “Prima-Porta-style” garden of the Villa Arianna at Stabiae, where he plans new excavations and an archaeological park. His current research is on the development of political spaces in Rome of the Late Republic.

Jason M. Kelly is director of the IUPUI Arts and Humanities Institute and associate professor of history at Indiana University-Purdue University, Indianapolis. He is the author of *The Society of Dilettanti: Archaeology and*

Identity in the British Enlightenment (2009) and currently preparing a book titled *Nicholas Revett and Georgian Neoclassicism*. He has written numerous articles on eighteenth-century art and the Grand Tour.

Nancy L. Klein is associate professor in the Department of Architecture at Texas A&M University. She has published articles on Late Bronze Age and early Greek architecture, and is coauthor of L.P. Day, N.L. Klein, and L. Turner *Kavousi II.A: The LM IIIC Settlement at Vronda. The Houses on the Summit* (2009). She is currently studying the Archaic and early Classical limestone architecture of the Athenian Acropolis.

Lena Lambrinou is an architect-engineer and archaeologist for Greece's Acropolis Restoration Service in Athens. She received an MA in Building Conservation from the University of York and completed her doctoral dissertation (National and Kapodistrian University of Athens) on ancient repairs to the Parthenon following a fire in the third century BCE, in 2015. She has participated in restoring the Parthenon's Pronaos, overseen restoration of its north colonnade, and prepared the final study for planned works on the Cella's west wall.

Rocco Leonardis is a registered architect and a member of RIBA. He teaches interior design subjects at the Fashion Institute of Technology and the School of Visual Arts. He is the author of *Systematic Perspective: A Handbook for the Classroom and the Professional*, NYSID (1998), "The Plan of Santa Sofia: A View into Early Medieval Design" (*Architectura*, 2003: 105–122), and *Foundation Drafting and Perspective* (2014).

Sandra K. Lucore is an independent scholar who received her PhD from Bryn Mawr College and whose current research focuses on Greek baths. As a senior member of the staff of the American Excavations at Morgantina, she has been directing the excavations of the North Baths, and is currently working on the final publication of the building to appear in the series *Morgantina Studies*. She is also co-director of the renewed excavations of the South Baths and West Sanctuary at Morgantina. In 2010 she co-organized the first conference on Greek baths and bathing culture, held at the American Academy in Rome, and she is co-editor of the proceedings (2013).

Clemente Marconi is the James R. McCredie Professor of Greek Art and Archaeology and University Professor at the Institute of Fine Arts, New York University. He is the author of *Temple Decoration and Cultural Identity in the Archaic Greek World* (2007), co-editor of *Sicily: Art and Invention between Greece and Rome* (2013), and editor of *The Oxford Handbook of Greek and Roman Art and Architecture* (2014).

Margaret M. Miles is professor of art history and classics at the University of California–Irvine. She is the author of *Agora XXXI: The City Eleusinion* (1998), *Art as Plunder: The Ancient Origins of Debate about Cultural Property* (2008), and editor of *Cleopatra: A Sphinx Revisited* (2011) and

Autopsy in Athens: Recent Archaeological Research on Athens and Attica (2015). From 2008 to 2014 she was the Andrew W. Mellon Professor at the American School of Classical Studies in Athens.

Stella G. Miller is Rhys Carpenter Professor Emerita of Classical and Near Eastern Archaeology in the Department of Classical and Near Eastern Archaeology at Bryn Mawr College. She has excavated widely in Greece and Turkey and is the author of studies in jewelry, Macedonian architecture, and ancient painting, including *The Tomb of Lyson and Kallikles* (1993).

Jenifer Neils is the Elsie B. Smith Professor in the Liberal Arts at Case Western Reserve University and is currently the chair of the Managing Committee of the American School of Classical Studies at Athens. She is the author of *The Parthenon Frieze* (2001) and editor of *The Parthenon from Antiquity to the Present* (2005).

Jessica Paga is assistant professor of classical studies at the College of William & Mary. She is the author of several articles and book chapters on the architecture and archaeology of Athens, and is a senior archaeologist with the excavations in the Sanctuary of the Great Gods, Samothrace, Greece. She is currently preparing a manuscript on building activity in Late Archaic and Early Classical Athens.

Olga Palagia is professor of classical archaeology at the National and Kapodistrian University of Athens. She is the author of *The Pediments of the Parthenon* (1998) and editor of *Greek Sculpture: Function, Materials and Techniques in the Archaic and Classical Periods* (2006) and *Art in Athens during the Peloponnesian War* (2009). She has coedited numerous conference proceedings and honorary volumes. She is currently editing the *De Gruyter Handbook of Greek Sculpture*.

Robert K. Pitt is an epigraphist and Greek historian specializing in Greek building projects, and particularly the inscribed contracts for large public works in the Classical and Hellenistic periods. He is currently working on a monograph on the Temple of Zeus Basileus at Lebadeia in Boeotia. He was assistant director of the British School at Athens from 2007–2014.

Spencer Pope is associate professor in the Department of Classics at McMaster University. His research focuses on Greek architecture, urbanization, and the development of the built environment, with special interest in the expansion of the Greek world and the establishment of overseas settlements in Sicily and southern Italy. He has published on Greek and indigenous Sicily, as well as Greek financial inscriptions.

Robin F. Rhodes is associate professor of art history (concurrent in classics) at the University of Notre Dame and principal investigator of the Greek stone architecture at the Corinth excavations of the American School of Classical Studies at Athens. He is the author of *Architecture and Meaning on the*

Athenian Acropolis, (1995), creator of the exhibit *The Genesis of Monumental Architecture in Greece: The Corinth Project* (2006), and editor of *The Acquisition and Exhibition of Classical Antiquities: Professional, Legal, and Ethical Perspectives* (2007).

Betsey A. Robinson is associate professor of history of art and classical studies at Vanderbilt University, Nashville, TN. She is author of *Histories of Peirene: A Corinthian Fountain in Three Millennia* (Ancient Art and Architecture in Context 2, 2011).

David Gilman Romano is the Nicholas and Athena Karabots Professor of Greek Archaeology in the School of Anthropology at the University of Arizona. He is the author of *Athletics and Mathematics in Archaic Corinth: The Origins of the Greek Stadion* (1993), coauthor with Irene Romano of the *Classical Collection of the Glencairn Museum* (1999), and collaborator with Lothar Haselberger on *Mapping Augustan Rome* (2002). He has been the director of the Corinth Computer Project from 1988. Since 2004 he has been the codirector and field director of the Mt. Lykaion Excavation and Survey Project.

Ingrid D. Rowland is Professor at the Rome Global Gateway at the University of Notre Dame, and a regular contributor to *The New York Review of Books* and *The New Republic*. Her books include *Vitruvius: Ten Books on Architecture* (with T.N. Howe and M.J. Dewar, 1999); *Giordano Bruno, Philosopher/Heretic* (2008); and *From Pompeii: The Afterlife of a Roman Town* (2014).

Philip Sapirstein is assistant professor of art history and digital humanities at the University of Nebraska–Lincoln. His research into the cultural processes behind Greek art and architecture, particularly the synthesis of Doric monumental buildings, explores applications of digital technologies. Following a dissertation examining the development of Archaic terracotta roofs, he has published on archaic architecture and Athenian pottery production, including articles in *Hesperia* and the *American Journal of Archaeology*.

Michael Scott is currently associate professor in classics and ancient history at the University of Warwick. He is author of *Delphi and Olympia* (2010), *Space and Society in the Greek and Roman Worlds* (2012), and *Delphi: Centre of the Ancient World* (2014). He has co-edited *volumes on Risk* (2012) and *Moses Finley: an ancient historian and his impact* (2016). He is presently completing a book on ancient global history entitled *Ancient Worlds: Spinning the Globe from Confucius to Constantine*.

Kristen Seaman is assistant professor in the Department of the History of Art and Architecture at the University of Oregon. Educated at Yale University and the University of California at Berkeley, she presently is coediting *Artists and Artistic Production in Ancient Greece* for Cambridge University Press (with

Peter Schultz) and completing a book about the association of rhetoric and innovation in the art of the Hellenistic courts.

John R. Senseney is associate professor of the history of ancient architecture in the School of Architecture at the University of Illinois at Urbana–Champaign. He is the author of *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture* (Cambridge University Press, 2011).

Rhys F. Townsend is professor of art history and classical archaeology in the Art History Program at Clark University. He is the author of *Agora XXVII: The East Side of the Agora. Remains Beneath the Stoa of Attalos* (1995) and coeditor of *Rough Cilicia: New Historical and Archaeological Approaches* (2013). He has written numerous articles on late Classical Greek architecture of the fourth century BCE as well as on the architecture of Roman Rough Cilicia. He currently codirects the Antiochia ad Cragum Archaeological Research Project in Gazipaşa, Turkey.

Barbara Tsakirgis is associate professor of classics and art history at Vanderbilt University. She studies ancient Greek houses and households around the Mediterranean world and is the author of several articles and a forthcoming book on the Hellenistic and Roman houses at Morgantina. She is also completing a synthetic study of Greek houses around the Mediterranean and the final publication of the houses excavated around the Athenian Agora.

Gretchen Umholtz is senior lecturer in classics at the University of Massachusetts, Boston. Her research and publications examine the interplay among architecture, politics, and religion in the ancient Greek world, especially in the late Classical and Hellenistic periods. She has participated in excavations in Athens, Corinth, and Sardis and in architectural fieldwork in Sicily.

Bonna D. Wescoat is the Samuel Candler Dobbs Professor of art history at Emory University and director of excavations in the Sanctuary of the Great Gods, Samothrace, Greece. She is author of *The Temple of Athena at Assos and Samothrace*, Vol. 9, *The Monuments of the Eastern Hill*, and editor of *Samothracian Connections: Essays in Honor of James R. McCredie* (with O. Palagia) and *Architecture of the Sacred: Space, Ritual and Experience from Classical Greece to Byzantium* (with R. Ousterhout).

Introduction

Among the most admired and conspicuous material remains of ancient Greek culture are the wonderful Greek temples, built in limestone or marble. The current condition of the temples ranges from mere foundations in the “romantic ruin” category to the well-preserved buildings that travelers today often visit in Greece, Italy, and Turkey. The Parthenon is the subject of various recent documentaries, and its sculpture frequently figures in discussions of the British Museum. Here readers will find the latest thinking about agency, design, construction, and function in temples and the many other types of Greek architecture. While temples were their preeminent type of building, the Greeks also invented stoas, theaters, bouleuteria, odeia, palaistrai, hippodromes, gymnasia, public baths, peristyle houses, and palaces; their cities were equipped with ship sheds and harbors and were defended by handsome walls. Their architecture reflects life lived in a warm climate near the sea in communities governed with civic participation and a love of athletics, performances, feasting, and religious festivals.

The study of Greek architecture began in antiquity: architects themselves wrote technical and theoretical treatises on individual buildings, many of them cited by Vitruvius in his handbook of architecture, written circa 20 BCE. Vitruvius has had an eager reading audience from the Renaissance onward, and today his work remains an invaluable source of information, much of it reflecting his library in the first century BCE. His text was the primary source of knowledge about Greek architecture until the mid-eighteenth century.

In 1748, during a visit to Pompeii (then just recently discovered), a small group of British architects came up with the idea of going to Greece to see the buildings there; James Stuart and Nicholas Revett then made the trip in 1752. David Le Roy, a French architect, followed two years later. Although travelers from western Europe had made that trip earlier, and had published drawings and accounts of buildings they saw, what made the work of Stuart and Revett distinctive was the precision and accuracy of their drawings and commentary; Le Roy’s work was distinctive for his pioneering effort to put the buildings in a historical sequence. Right about this time, other architects (Italian, French, German, and British) were realizing that good examples of Greek temples were still standing in Italy at Paestum, not far south of Naples, and in Sicily, and they began exploring what was close at hand.

It was the publication of the first volume of Stuart and Revett’s work in 1762 that marks the beginning of modern study of Greek architecture, for the Society of Dilettanti who financed their trip (and several subsequent

explorations) specifically charged Stuart and Revett to be as accurate as possible in their documentation. Their charge was twofold: to record accurately so that the ancient buildings could be a model for current practitioners and, secondarily, to expand our knowledge of antiquity (Soros 2006). These two purposes fulfilled so admirably by Stuart and Revett have continued to direct how Greek architecture is applied or studied, now for more than two hundred and fifty years.

Their book fueled a resurgence of interest in classicizing styles, and the stylistic movement of Neoclassicism has never really died out, for Classical architecture is based on principles of form, ratio, harmony, and proportion that still matter, even with modern materials, and still have great appeal, even in new guises. The archaeological recording of physical remains also owes much to Stuart and Revett's work: they recorded inscriptions, drew sculpture, and made conjectural interpretations based on ancient authors all in much the way that the work is still carried out today (though enhanced with cameras, computers, laser-scanning and Total stations). Excavations over the past two and half centuries have uncovered a vast range of material that has helped shape current thinking about Greek architecture: careful studies of buildings are fundamental, but so too are studies of relevant inscriptions, of architectural sculpture, of Greek religion and ritual. Salient in current work, besides an ever-increasing range of comparanda, is the necessity for an understanding of the historical, environmental, and archaeological context of architecture.

While Stuart and Revett's *The Antiquities of Athens* continues to inspire anyone caught by the magnetic pull of Greek architecture, since the mid-twentieth century several generations of beginning students of architecture (and scholars checking for dates or facts) have relied on W.B. Dinsmoor's *The Architecture of Ancient Greece* (1950), A.W. Lawrence's *Greek Architecture* ([1957] 1996), and G. Gruben's *Die Tempel der Griechen* ([1966] 1986). These books still provide useful, basic information, although readers should be cautious about interpretations and dates for buildings that may have been superseded. Two excellent, more comprehensive handbooks have appeared more recently: E. Lippolis, M. Livadiotti, and G. Rocco's *Architettura greca: Storia e monumenti del mondo della polis dalle origini al V secolo* (2007) provides a welcome, up-to-date historical narrative with crisp plans and drawings and a comprehensive catalog of buildings through the end of the fifth century BCE. It completely replaces the older books just cited for the period it covers. M.-C. Hellmann's three volumes on principles of construction and religious, defensive, and civic Greek architecture (2002; 2006; 2010), give essential, up-to-date information for a broad chronological range, with a wealth of useful illustrations. For Greek architecture in Sicily and southern Italy, D. Mertens' *Städte und Bauten der Westgriechen* (2006) is indispensable. A valuable survey of focused scholarly research on Greek

architecture published since 1980 was undertaken by B.A. Barletta (2011), and readers are urged to keep her article at hand as a complement to this *Companion*. Much of current work on Greek architecture is published in the form of articles in journals, which can be researched on the Internet.

A large amount of scholarship has been published recently on the Parthenon in Athens and on other buildings on the Acropolis, of central importance for the Classical period. Much of this work has been carried out in conjunction with the intensive conservation efforts on the Acropolis sponsored by the Greek government (see [Chapter 35](#)). Thus this *Companion* gives somewhat more attention to the earlier Archaic period, to buildings outside central Athens, and to the later Hellenistic period. Some of Hellenistic architecture is superbly well preserved, especially in ancient Greek sites in modern Turkey, and it deserves even more discussion.

The ancient Greeks themselves put much of their surplus energy and money into their sanctuaries and agoras, hence monumental architecture is central in these discussions. But this collection of essays touches on the overall scope of Greek architecture, including its setting in the landscape, urban development and utilitarian building, and the more famous monuments of Greek antiquity. We include discussion of various forms of architectural decoration, such as architectural sculpture, interior design, floor mosaics, and wall painting as well as how architectural motifs were used in funerary monuments. Practical matters of design, construction, and engineering are addressed, as well as architectural theory and the role of the architect, the impact of Greek architecture on later periods, and on-going concerns with reconstruction and preservation of sites and monuments.

This is a *Companion*, however, not an encyclopedic survey or handbook, and no attempt has been made to include every known building, or even all of those of considerable significance (we hope such a useful compendium could be manifested as a web site, with 3D laser-scans of every building). Rather, each of the 30 authors has selected a small range of examples or issues to discuss within potentially very broad topics. One of the benefits of a collection like this is the multiple points of view it offers, different approaches, and, of course, occasional differences of opinion.

Since the time of their invention in the seventh and sixth centuries BCE to the present day, the ancient Greek orders of architecture had a profound influence on the visual environment in the Western world. The reception and impact of Greek architecture was crucial to the formation of Roman architecture and deeply influential in the early modern period. Typically that transmission to the early modern has been regarded as a separate topic, outside of classical studies and suitable for architectural history but not for archaeological discussions of architecture. In contrast to such a peculiar division, continuities and influences over time is a running theme throughout this book and a specific subject of four chapters.

The future of the study of Greek architecture is very promising, for, thanks to new technologies, we are on the eve of an exciting expansion of the field, vastly beyond what was possible for the pioneers of the eighteenth century. Digital imagery and large databases will transform our abilities to document, reconstruct, and compare plans, elevations, construction techniques, and details of architectural decoration, and all this information will be more accessible than ever. More fieldwork (both traditional and digitally based) is needed: many temples and other monumental buildings have never been properly measured and documented, or have not been studied thoroughly since the eighteenth and nineteenth centuries. Beyond documentation and imagery, historical study of the contexts of architecture also continues apace. Monumental Greek architecture was expensive, and the investment in its construction shaped religious, domestic, and political spaces throughout the Mediterranean wherever there was a Greek presence. Architecture provides a significant key to understanding ancient Greek culture and a basis for visualizing the actual, physical setting of past events.

A note on the spelling of names and places: we have generally followed Greek spelling, except for those (such as Pericles, Thucydides, Socrates, acropolis) that are very familiar in their Latinized forms, hence the usual inconsistency. The abbreviations for ancient authors used here are those of the *Oxford Classical Dictionary*, and the abbreviations for journals follows the system used by *L'Année philologique*.

REFERENCES

Barletta, B.A. 2011. "State of the Discipline: Greek Architecture." *AJA*, 115: 611–640.

Dinsmoor, W.B. 1950. *The Architecture of Ancient Greece*. 3rd ed. London.

Gruben, G. [1966] 1986. *Die Tempel der Griechen*. 4th ed. Munich, Darmstadt.

Hellmann, M.-C. 2002. *L'Architecture grecque. Vol. 1, Les Principes de la construction*. Paris.

Hellmann, M.-C. 2006. *L'Architecture grecque. Vol. 2, Architecture religieuse et funéraire*. *Manuels d'art et d'archéologie antiques*. Paris.

Hellmann, M.-C. 2010. *L'Architecture grecque. Vol. 3, Habitat, urbanisme et fortifications*. *Manuels d'art et d'archéologie antiques*. Paris.

Lawrence, A.W. [1957] 1996. *Greek Architecture*. 5th ed. Revised by R.A. Tomlinson. New Haven.

Lippolis, E., M. Livadiotti, and G. Rocco. 2007. *Architettura greca: Storia e monumenti del mondo della polis dalle origini al V secolo*. Milan.

Mertens, D. 2006. *Städte und Bauten der Westgriechen*. Munich.

Soros, S.W., ed. 2006. *James "Athenian" Stuart, 1713–1788: The Rediscovery of Antiquity*. New Haven.

Stuart, J. and N. Revett. [1762–1818] 2008. *The Antiquities of Athens: Measured and Delineated by James Stuart and Nicholas Revett, Painters and Architects*. Introduction by Frank Salmon. New York.



Map 0.1 Greece and the Aegean.

Source: Adapted from Erskine, *Companion to Ancient History*, map 1.



Map 0.2 Southern Italy and Sicily.

Source: Rhodes, *A History of the Classical World*, map 2.



Map 0.3 Map of Italy.



Map 0.4 Map of the Mediterranean.

PART I
Invention, Design, and Construction

CHAPTER 1

Landscape and Setting

Betsey A. Robinson

Greek civilization encircled the Mediterranean, touching all three continents that border the nearly landlocked sea. In the first millennium BCE (and even much earlier) that sea supported trade, transportation, and a share of sustenance, while on land, plants and animals were cultivated, and native resources were tapped. Landscape is here considered not only as setting but indeed also as a companion to Greek architecture, the product of complex interactions of local populations with the land and native flora and fauna. Buildings and cities exist within such landscapes, testaments to human relations with the natural world, not only in the raw materials transformed into ordered forms but also through dynamic interplays with space and place, the experiences of visitors, and their very motivation across and among regions. This overview will emphasize mainland Greece and the Peloponnese, the Aegean islands, Ionia (coastal Asia Minor), and southern Italy and Sicily (Magna Graecia). But the Greek experience was likewise embedded in the diverse environments of other archipelagos, Crete, coastal Egypt and *Cyrenaica*, and still more distant reaches, from southern France to the northern Black Sea shore.

This survey of ancient landscapes will begin with broad discussions of current approaches, geomorphology, and environmental and climatic regimes showcasing the intense regionality of the Greek world, for general trends are punctuated by very different conditions very near each other. Snapshots of ancient agriculture and the exploitation of earth minerals will follow, weighing ancient and modern claims of depletion and highlighting sustainable practices. Although the temporal frame is on the first millennium BCE, I should note that Bronze Age inhabitants had already pursued many activities discussed here and had themselves left visible traces. Few pristine settings, or true wildernesses, existed in the classical Greek world, so it is more useful to distinguish zones of cultivation from roughland (Grove and Rackham 2001: 167).

Approaches

A definition of the term “landscape” is in order, with some discussion of the different ways in which it is understood in current scholarship. Landscape

archaeology, field survey, and theoretical geography are three current approaches to the subject. The landscapes discussed here are all “human landscapes,” formed, impacted, and viewed by humans. These landscapes not only record human activity but are also vested with a wide range of conceptual, ideational, and constructed qualities, and they reflect political circumstances, sociocultural values, and communal identities (Knapp and Ashmore 1999).

Landscape archaeologists deploy diverse methods to understand gardens and other planted areas, from remote sensing and imaging to intensive survey and excavations. Specialists recognize cultivated soils; features such as pits, fence-lines and stake-holes; and artifacts like planting pots and other implements, and they collaborate with biological scientists to understand faunal and floral remains (Miller and Gleason 1994; Gleason 1994). An early success in garden archaeology came in excavations around the Athenian Hephaisteion, which revealed rows of rectangular cuttings north and south of the building that have been recognized as third-century BCE pits into which seedlings were planted in root pots, perhaps laurel and pomegranate (Thompson 1937).

Nondestructive and less expensive than excavation, field survey offers macro- and micro-level diachronic perspectives on human landscapes, especially in final analyses. Model studies are the Boeotia Survey (e.g., Bintliff, Howard, and Snodgrass 2007; Bintliff and Slapšak 2007) and the Argolid Exploration Project (Jameson, Runnels, and van Andel 1994). In the Peloponnese, the Minnesota Messenia Expedition focused on the Bronze Age (MacDonald and Rapp 1972), while the Laconia Survey (Cavanagh *et al.* 2002) and Pylos Regional Archaeological Project have sought broader perspectives (Davis 2008). Such regional surveys have flourished in the new millennium, ever-expanding coverage and promising important results (e.g., Bevan and Conolly 2004; Tartaron *et al.* 2006). Disciplined environmental or ecological studies, often undertaken in conjunction with surveys, offer important data against which to evaluate ancient sources and serve as correctives for modern generalizations about ancient conditions and sometimes fallacious backward projections (van Andel and Runnels 1987; Rackham 1996; Grove and Rackham 2001).

In contrast to these empirical field studies, cultural geographers use the concept of landscape as a springboard for engaging with a spectrum of phenomena relating to natural and human-driven occurrences; their focus shifts from description to interpretation (Wylie 2007). Their use of the term, influenced by its etymological origin in pictorial art, is highly visual and always socially charged (Cosgrove 1998; Wylie 2007). To landscape theorists, topography and geomorphology, plants, and animals all exist in dynamic and reciprocal relations with human inhabitants, and the resulting human landscapes also assume conceptual and symbolic dimensions. Landscape thus becomes a participant in cultural processes. While perceptions

and relationships with environment and landscape are fundamental phenomena of human experience, they are, of course, just parts of complex systems. Some classical scholars have embraced the challenges of articulating the ways in which the countryside influenced Greek society and politics, and vice versa (Osborne 1987; Shipley 2006). Much recent scholarship has focused on religious foundations, favoring sociopolitical practicalities over affective or emotional responses as the driving forces for the placement and growth of sanctuaries (following de Polignac 1995). Other studies have attempted to articulate the importance, and complex interplays, of both (Edlund 1987; Cole 2004; also works in Alcock and Osborne 1994).

Physical Geography

The topography of the ancient Greek world is highly varied, stretching from the edge of the Eurasian steppe to the African desert fringe. In the Greek heartland (*Hellas* proper), sea, islands, and mountains offer spectacular scenery, but for much of antiquity, coastal dwellers tempted fate, and mountain life was very austere. Only about 20 percent of mainland Greece is arable (Thompson 1963: 30), with only half of that figure given to permanent crops. In short, Greece is rich in beauty but relatively poor in fertile ground. Over the first millennium BCE, Greeks would carve out niches in more diverse regions and environments.

Hills and highlands offer the most desirable sites of human settlements, surrounded by “ribbons of cultivation” along coastal plains. Deltas, alluvial plains, and poljes (landlocked karstic plains) occupy significant territory, offering both benefits and challenges. They often host deep and fertile soils, but they require significant irrigation and drainage efforts to ensure livability and productivity. Likewise, of the innumerable Greek islands, the largest and those with good water and soil fostered significant populations, while the barren majority supported fewer inhabitants, who lived humbler lives.

The sea was an integral part of the Greek way of life. In the middle of the Greek world, the Mediterranean Sea is a remnant of the primordial Tethys, virtually landlocked, tideless, and highly saline. The Greeks’ main “frog pond,” however, is the Aegean, a smaller basin with more than 1000 islands scattered across it. Projecting peninsulas and constellations of islands with prominent headlands facilitated navigation and encouraged movement across the water. Early shipping hugged coasts and island-hopped where possible; oared warships would always be coasters. Risking peril for profit, long-distance transit increasingly left the safety of the shallows. It became possible to cross the Mediterranean in a few days in favorable conditions. Roman-period figures show what could be done. The run from the Bay of Naples to Egypt could be as short as nine days, while the upwind return might stretch to

two months (Casson 1971: 282–291). But many long-distance voyages ended in disaster, as told by ancient authors and confirmed by underwater archaeology. Land transport, however, was expensive and slow, with individuals and small parties perhaps covering 24 km in a day, and armies somewhat less (Shipley 2006: 60).

Climate and Microclimate

The greatest changes to climate and environment occurred before human occupation. The climate of the first millennium BCE seems to have been similar to that of the present day (though perhaps there was more snow), and environmental conditions were not unlike modern conditions prior to 1900 (Meiggs 1982: 40; Rackham 1990: 88; Rackham 1996: 23). In many areas, especially lowland and littoral zones, the climate is appropriately *Mediterranean*, characterized by hot, dry summers and relatively mild winters, during which more than half the total precipitation normally falls. Northwesterly Etesian winds prevail in the summer, while the winter's jet stream-driven westerly and southwesterly winds bring showers. These are interrupted by blasts from the north, the biting cold mistral (or bora), and from Africa, the sirocco, with its red skies and warm, sandy rain. The climate of central and eastern Macedonia and Thrace is *temperate*, also hot in the summer, but colder in winter. The rugged Pindos Mountains have an *Alpine* climate, bitterly cold and hostile in winter, with the largest peaks snow-capped well into the spring. The weather, therefore, tipped between extremes, from very hot to biting cold, with mild and green springs and falls.

The western Mediterranean receives more rainfall, in general, than the east, and the west coasts of Italy, the Balkans, and Anatolia are among the greenest regions of those peninsulas. Thus, northern and western Greece is relatively well watered compared to the semi-arid eastern regions. The dividing line stretches from Thermopylai to Cape Matapan, so the major centers of Thebes, Athens, Corinth, Sparta, and most Greek islands are on the dry side.

As Greeks' horizons expanded, explanations were offered for physical and cultural differences, "partly environmentalistic, partly cultural in their emphasis" (Glacken 1967: 7). From the Hippocratic corpus, the fifth-century work *Airs, Waters, Places* is one of the most valuable sources. Wind and water qualities determined the constitutions of local peoples (Hippoc. *Aer.* 3–9), and different habitats influenced the development of human institutions and their impact (Hippoc. *Aer.* 12–24).

Short-term fluctuations were readily apparent, as in the case of annual rainfall. For example, one or more droughts seem to have caused Athenian food shortages and driven modifications of waterworks at Athens and Corinth in

the fourth century (Grove and Rackham 2001: 43; see Camp 1982; Robinson 2011: 146). In contrast *Theophrastus* (*Hist. pl.* 4.11.3; 8.6.6) notes the flooding of Copais after heavy rains in 338 BCE. A sense of greater climatic cycles can be read in Aristotle's works. Cold and rainy epochs occurred as predictably as the seasons (*Mete.* 1.14.352a29), and rivers had finite histories (1.14.352a29); even as sea level rose in some places, it would recede in others. Aristotle (*Mete.* 1.14.352a10–16) notes that in the time of the Trojan War, Argos was marshy and unproductive, while the territory of Mycenae had better land and greater fame. But by his time their fortunes were reversed: Mycenae had become dry and unproductive, while the land around Argos was flourishing under cultivation. Although Aristotle argued that such processes were at work on grand scales and over periods much longer than a human lifetime, he also observed that human activity could impact the environment. He seems, however, to have been unconcerned about the net effects of what he considered small changes of brief duration (Matthen 1997).

Modern opinions range widely on the extent to which ancient inhabitants altered or damaged their environment through their exploitation of animal, plant, and mineral resources. Popular wisdom holds that the Greek environment suffered in Classical antiquity and more so ever since, a misconception with eighteenth-century roots (Rackham 1990: 86). In a time when human impact on climate seems undeniable, it is tempting to extrapolate back through recent and ancient history and blame human activity for processes with other primary causes. Complaints of deforestation (Strabo 14.6.5, citing Eratosthenes on Cyprus) are sometimes cited as evidence of human damage and ancient concerns (see especially Hughes 1994), but such observations are relatively rare, suggesting that problems were either limited or not of great concern. The rhetorical context of some examples (e.g., Plat. *Criti.* 111b–d, on the deforestation of Athens) limits their usefulness for understanding environmental realities. Ecological studies indicate that Mediterranean woods were not significantly depleted over the course of antiquity, and many practices – like coppicing for firewood – were highly sustainable (Meiggs 1982; Grove and Rackham 2001).

Ground Cover and Zoning

Vegetation sorts out into three main zones or biomes, according to rainfall, soil qualities, and altitude. Within each, however, there exist many microzones, generally dictated by the differential availability of water (Grove and Rackham 2001: 55). The lowest – also the main zone of cultivation – is dominated by oaks and coastal pine where soil is rich enough. Rougher terrain with diminished soil-cover tends to be colonized by garrigue/gariga or maquis/macchia, aromatic, woody shrub coverage similar to North American

chaparral. Gariga consists largely of knee-high bushes, and macchia boasts taller shrubs, averaging 1–2 m in height with some reaching as much as 4 or 5 m, beyond which the terms “savannah,” “woodland,” or “forest” apply (Grove and Rackham 2001: 46–47). Small trees are scattered among the shrubs, the dominant pines interspersed with holm oak (*Quercus ilex*). Teeming with wildflowers in spring, gariga and macchia fade to yellow and brown in the summer and are revived by autumn rains. Providing fodder for sheep and goats and flavoring honey, this ground cover is prone to wildfire, and occasional burnoffs recharge the flora.

The second zone (500–1200 m) is dominated by deciduous trees. Oak is prevalent, accompanied by maple, elm, sycamore, cypress, pine, and juniper, with alders, poplars, and willow clustering around streams and springs (Meiggs 1982: 41). Oak and maple edge into the uppermost zone, which is otherwise a realm of conifers. Even they thin out between 1700 and 2000 m, above which only alpine species prosper (Rackham 1990: 90–91).

Central Greece lacked true forests and good timber, while other areas were famous for their wood: the cedars of Lebanon, the firs of northern Greece, and other large trees of Pontus and Phrygia. Athens imported much of its timber from Macedonia, the Black Sea, Thessaly, Arcadia, Euboea, and Phocis (Theophr. *Hist. pl.* 5.2.1). Temple contracts from Epidauros and Delos record orders for oak, while inscribed specifications for the arsenals of the Piraeus discuss details without naming the wood (Meiggs 1982: 46).

From Relief to Landscape

Mountains have an undeniable effect on the way one experiences Greece, eclipsing, then revealing, views. From a valley floor a traveler rarely sees the summits of enclosing mountains but must rise at least part way up the side to catch a glimpse. High-level routes climb over passes and into upland valleys that suddenly open out around the traveler, who just as abruptly, on reaching a downward turn, will find the lowlands laid out below, with distant ranges overlapping as far as the eye can see.

Mountains cover about 75 percent of modern Greece. Predominantly limestone in composition, they erupt in unforgiving ranges and massifs that fragment land and environment, and differentiate regions (Meiggs 1982: 41). Pierian Olympus is tallest, but the densest mountains are in the Pindos, filling much of northern Greece and dipping toward the Corinthian Gulf, with Parnassos and Helikon facing across to the mountains of Achaia. Deeper in the Peloponnese, Arcadia is dominated by masses of sharp young peaks, and the Taygetos and Parnon ranges frame Laconia, running into the bitter ends of the peninsula. The mountains of other areas colonized by Greeks tended to be

more orderly, from the Apennine backbone of Italy to the Taurus Mountains in Asia Minor.

Mostly unsuited for large-scale farming, mountains are nonetheless important in the scheme of things, the *locus classicus* of summer grazing for flocks of sheep and goats, refuges in difficult times, and as recently argued, important highways (Horden and Purcell 2000). Lacking the switchbacks invented to carry motor traffic over high passes, ancient roads frequented by people on foot or horseback rose at opportune points, then ran high above valley floors, maintaining altitude along the faces of surrounding mountains and sometimes shifting sides when valley walls converged and reopened in different directions.

Greek civilization developed on a seismically active stage, studded with volcanoes and regularly rocked by earthquakes. Volcanoes are scattered across the Mediterranean basin, some as solitary seamounts like Melos, Santorini, Nisyros, and Methana, now joined to the Argolid by a narrow isthmus, others cresting in sequence, like the Aeolian archipelago, and still others towering over larger landmasses, such as Etna and Vesuvius. Despite their instability, people were attracted to volcanic regions by their hydrothermal features, fertile ground, and useful mineral resources. In antiquity, as today, volcanism would have been a fact of life, with volcanoes often quietly active in the background, and occasionally erupting. Earthquakes struck without warning, sometimes generating tsunamis. A famous case is the destruction of Helike by an earthquake and incursion of seawater in 373 BCE (Strabo 8.7.2; Paus. 7.24.4–6, 12).

Greek poljes were especially important habitats and often acquired mythical traditions. Karstic outlets, sinkholes or *katavothras*, are the main routes of drainage, and flooding may occur after extraordinary snowmelt or rainfall, or if outlets become blocked, through natural or human action or inaction. Cresting in winter and spring then falling through the summer, waters left behind deep alluvial soils and emerging margins that remained moist and could be farmed long after other land dried up (van Andel and Runnels 1987: 492; Grove and Rackham 2001: 324). The poljes of Copais in Boiotia and Stymphalos in Arcadia follow this pattern, and in both cases careful maintenance of natural drains has been necessary to protect surrounding settlements and preserve cultivable conditions from the Bronze Age (often attributed to Herakles: Diod. Sic. 4.18.7; 15.49.5; Paus. 8.22.4–9; 9.38.7; see Sallowey 1994: 83) through the Roman period, and, indeed, to the present. Difficult situations inspired ingenious solutions. Lacking egress, the Thisbe plane in Boiotia was inundated each spring, and Bronze Age residents built impressive installations to control and husband water for use in dry months; these were repaired in the early Hellenistic period (Knauss 1992). Still visible is a dike dividing the plain that was used to divert water to one side and then to the other in alternating years, allowing the dry side to be cultivated (Paus.

The typical Greek river was a seasonal torrent or small perennial stream. Less common were large river systems, like the Alpheos and Eurotas, or the majestic Acheloös. Mediterranean river deltas are often difficult to negotiate, gradually advancing and forming lagoons, shifting channels, and shoals. Navigable rivers nonetheless beckoned as inroads into the countryside and beyond.

Alluvial processes causing perceptible – and sometimes dramatic – changes in historical times were usually in play long before surrounding cities were founded. For example, the Maeander river valley is a graben (rift valley) that runs southwest from deep Anatolia into the Aegean. In the first half of the first millennium BCE, the river flowed into a broad bay that extended well inland from Miletos and the island of Lade northeast past Priene and Myos and southeast to Heraklea under Latmos. By the time the Greeks drove away the Persians in the early fifth century BCE, alluvium was advancing on Myos and Priene, eventually provoking the relocation of the latter. In the Roman period, the gulf of Latmos was an inland lake (now called Lake Bafa), and even Miletos was landlocked by late antiquity (Greaves 2000). Similar processes are evident in the Troad and at Ephesos.

Macedonia's royal cities were likewise located in a fast-changing environment, rising around the fringes of the Emathian plain, a depressed basin in which four large rivers – the Haliakmon, Lydias, Axios, and Gallikos – merge into a great deltaic complex. In prehistoric times the basin was a bay extending about 40 km inland from the present shore (Higgins and Higgins 1996: 109; Ghilardi *et al.* 2008). Sedimentation naturally turned much of the basin into dry land by the fifth century BCE, but it left a body of water known as Lake Lydias (modern Lake Giannitsa) in the middle, itself reclaimed in the early twentieth century. On the shores of the shrinking Lake Lydias, Pella depended on extensive dredging to remain a viable port through the third century, when it sheltered Demetrios' 500-ship fleet (Hdt. 7.123; Thuc. 2.99–92.100; Strabo 7.23; Ghilardi *et al.* 2008).

Agriculture, Gardens, and Groves

Most human sustenance came from farming, and new, more productive agricultural systems supported significant population growth in Classical antiquity (Sallares 1991). The main staples of Greek life were bread, wine, and cured olives and oil. Wheat and barley were the most important grains in ancient Greece. Grapes became the wine that fueled the Greek symposium (always mixed with water). Vines thrived in well-drained limey soil, plumped

by spring rains and ripened in the summer sun. Olives were grown for both fuel and human consumption. Wild olives favored the semi-arid eastern Mediterranean littoral and spread westward and inland under cultivation, thriving in rugged terrain, above the fields but not beyond 600–800 m (Sallares 1991: 17; Rackham 1990: 91). While they do not tolerate deep frosts, they resist both drought and fire (Plin. *HN* 17.241). Other produce included a variety of legumes, onion, garlic, almonds, figs, and apples (Thompson 1963: 16; Carroll-Spillecke 1992: 89).

Even most “urban” Greeks spent significant time in countryside villages and farms, attending to their fields, orchards, and pasturage. Bordered by field walls, fences, or hedges, farms tended to be modest in scale, averaging 9–13 acres and rarely exceeding 89–111 acres (Hanson 1998: 43); and in many cases family properties were disparate tracts, more or less scattered across the region (Osborne 1992: 375). Land was allotted to citizen lineages, and ownership conveyed status. Nonetheless, owners often worked the fields themselves, by hand or with draft animals, aided by slaves and other laborers. A number of Attic farmhouses are known, from the famous fifth-century Dema House in the Aigaleos-Parnes gap and the fourth-century house at Vari on the southeast flank of Hymettos to others ranging from Cape Zoster to Laurion (see Goette 2001).

People at all levels of society owned livestock (Semple 1922; McInerney 2010). Oxen were perhaps most highly prized, but few regions had the resources to sustain herds of large grazers. Even in the most fertile areas, the dry summers killed most lowland pasturage for two to six months, leaving green fringes in which horses and cattle were raised. Better adapted to marginal conditions and seasonal transhumance, sheep and goats were most numerous; they provided milk, cheese, wool, hides, and manure, as well as meat. Pigs thrived especially in wetter regions but were found everywhere.

A large city would have a number of urban groves, offering shade and an escape from urban bustle. The agora was one site where trees might be planted, as noted by the fifth-century statesman Kimon in the Athenian Agora (Plut. *Vit. Cim.* 13). City suburbs would have been a “green belt of vegetation,” filled with the market gardens that provided city dwellers with vegetables, fruits, and flowers, as well as park-like reserves (Carroll-Spillecke 1992: 86). Sacred sites dotted the Ilissos valley, including a shrine of Acheloös and the Nymphs near which Plato imagined Sophocles sitting with Phaidros by a plane-tree-sheltered spring (*Phdr.* 229c). The greenswards around Athens included not only gardens but also groves and, by the late sixth century, well-planted gymnasia – the Kynosarges beside the Ilissos, the Academia outside the city walls to the west, and the Lykeion to the east. The last would be known for the School of Aristotle, and his successor, *Theophrastus*, embellished it with gardens and a sanctuary of the Muses (Diog. Laert. 5.52–53; Thompson 1963: 6–7). Followers of *Epicurus*, who

met in his garden not far from the Academia, came to be known as the “philosophers of the garden.” As to the appearance of gardens, visual and archaeological evidence is sparse. Though privileging elite experience, literature nonetheless reflects important social and symbolic purposes (Osborne 1992).

Mineral Resources

Mining and quarrying operations highlight the symbiotic relationships between city and *chora* (surrounding countryside). The needs of population centers drove activity in the countryside, while its resources were used not only to build the city but also to display independence and identity (Osborne 1987). The limestone underpinnings of much of the Greek world are relatively poor in metal ores and precious stones. Trace minerals could be extracted, often with great effort, so, for quantity, Greek cities relied largely on importation. Iron ores were mined across Boiotia, in parts of the Peloponnese, and on a number of islands. On Thasos, silver was mined from the early Classical period, and eastern Macedonia would become a center of precious metal production, especially gold (Osborne 1987).

In central Greece, silver ores only occur in southern Attica and on nearby islands, particularly Siphnos. The Siphnian mines were abandoned after the end of the sixth century BCE, while the Athenians struck an abundant vein of silver-rich ore at Laurion in the fifth century BCE, and Attic silver production remained intense well into the next century. Mine-shafts and tunnels, processing facilities (particularly cisterns and washeries), and waste heaps are scattered through the countryside between Thorikos and Sounion, while smelting furnaces were generally located on the shore, as at Panormos. Fires were fueled with charcoal from local wood without great harm to the environment. About one-seventh of Attic territory could have produced an adequate supply of such wood over the centuries (Grove and Rackham 2001: 172). Epigraphic and literary testimonia indicate that the mines were state-owned but operated by private individuals and worked by thousands of slaves. Athens and its wealthiest residents prospered, and the rural landscape was transformed not only by industrial facilities, agricultural villages, and farms that grew up around them but also by evolving social structures (Osborne 1987: 78).

Clay was important for pottery, sculpture, and architectural components, like roof tiles and ornaments, but its extraction, usually near local manufactories, leaves fewer traces than other mining and quarrying operations (see Whitbread 2003). The long-distance trade of building stone was relatively unusual on the mainland and large islands before the Roman imperial period. The stone used in monumental building projects – mostly limestones and

marbles – generally came from the immediate environs of a site, sometimes literally underfoot. Quarry ownership remains a vexing issue; arrangements seem to have varied significantly, from private to fully public holdings, and diverse labor and transportation arrangements (Lolos 2002).

The term “poros” (ancient πῶρος) refers to a range of relatively soft, light-colored sedimentary stones, most commonly oolitic and shelly limestones of local origin, following the usage of ancient authors (except Theophr. *De lap.* 1.7; Plin. *HN* 36.132). Poros was never left bare but was finished with fine stucco and slipped or painted. At *Corinth*, Rhodes, and Syracuse, building stone was quarried very near its ultimate destination. *Corinth* exploited the oolitic limestone of fossil dunes that traverse the area. Extensive quarries have been explored to west and east, and evidence of quarrying is plainly visible all around the Archaic temple at the center of the site (Lolos 2002; Hayward 2003). Corinthian quarries produced a surplus, and the use of Corinthian stone at Epidauros and Delphi is well attested (Lolos 2002: 206).

Long-distance trade in high-quality marble is evident from the sixth century forward. At Delphi the most common building stone was a fossiliferous limestone taken from outcrops and small quarries until a larger quarry was opened about 5 km to the southwest (Papageorgakis and Koliati 1992). Marble might be used, however, to make an impression. Thus, when sponsoring the reconstruction of the Temple of Apollo in the late fifth century, the Athenian Alcmaionids imported Parian marble (Hdt. 5.62.2–3), used for the entablature, pediments, and roof. The architect of the fourth-century temple, like the stone, would come from Corinth (Osborne 1987: 84). At Olympia, the Temple of Zeus was built of a coarse shelly limestone extracted south of the Alpheios River, with its metopes, pedimental sculpture, and roof finished in Parian marble (Paus. 5.10.2; 6.19.1; Higgins and Higgins 1996: 68).

Where marble was present, it naturally became the preferred material for sculpture and architecture. The island of Naxos is known for a pure white, coarse-grained marble, and unfinished statues can still be seen in two ancient quarries, at Flerio (Melanes) and Apollonia. Neighboring Paros produced an especially fine white marble, ancient *Lychnites*. The Attic mountains Pentelikon and Hymettos both contain high-quality white and grey marbles, but in antiquity, the former mainly produced white marble, while the latter was preferred for its grey (Higgins and Higgins 1996: 31–32). On Pentelikon, most of the ancient quarries faced south, overlooking the city. About 25 are known, among which, the Spilia quarry is believed to be the source of stone used in the Parthenon (Korres 1995). Quarries on the west face of Hymettos produced quantities of marble from the third century into the Roman period, and from the foot of the mountain came lower-quality limestone and conglomerate favored for foundations. Elsewhere in Attica, temple builders relied on lower-grade stones of local origin. For the Classical temples at Sounion, a native marble sufficed despite its milky grey veins and oblique

fissures, while monuments at Brauron and Loutsa were built of sandstone.

Ancient Responses: Affective, Artistic, and Architectural

An emotional or affective response to one's surroundings has been termed *topophilia* by Yi-Fu Tuan (1990), but it is an inconstant sensibility, and particularly difficult to pin down among the Greeks. How are we, today, to measure the importance of nature and landscape in ancient Greek culture? How did physical characteristics influence the locations and development of sanctuaries and other sites?

Perspectives on rural topography, ecology, and livelihoods are fairly limited and widely scattered in Greek literature. Such subjects probably interested less literate elements of the population more than the elite authors of the day, if they were not simply taken for granted. Poetry contains occasional reflections, from evocations of landscapes to more subjective assessments of beauty (the latter being more common in Roman times). Often cited is Archilochos' criticism of Thasos as standing like the back of an ass, covered with wild woods (Frg. 21, in Plut. *De exil.* 12.604c). And Homer's description of a spring-fed cave on Ithaca surpassed mere description to evoke a numinous place where the nymphs chose to reside (*Od.* 13.102–112). Lyric and choral poems are full of nymphs and river gods who personify waters, signify places, and articulate relationships between sites and peoples through mythological narratives and genealogies. Dramatic references to landscape are selective, generalized, and often contrived to suit the playwright's purposes (Roy 1996).

The Presocratic philosophers' preoccupation with the natural world gave way to more anthropocentric interests in the Classical period. Intended for physicians, the Hippocratic *Airs, Waters, Places* is a rare work of the fifth century to focus on the environment, albeit in relationship to questions of human health and concerns. Aristotelian and Stoic philosophers would turn some attention back to nature. Treatises on animals by Aristotle and on stones and plants by *Theophrastus* offer slices of contemporary science and anticipate Hellenistic encyclopedism. Additional fragments appear in the citations of Roman-era authors, from Strabo and Vitruvius to Pliny and Plutarch, Pausanias and Athenaios. But these and other works only hint at the complexity of nature and human responses, from practical details to attitudes or appreciation. Emotional and imaginative connections are still more difficult to pin down.

The visual arts offer mixed messages. In contrast with Minoan paintings of exotic landscapes and the Hellenistic and Roman imperial fascination with representations of mythological, sacro-idyllic, and even quotidian landscape, the art of Archaic and Classical Greece is far less focused on the natural setting – a phenomenon dubbed the “Nowhere” of Greek art by Jeffrey Hurwit (1991). The actions of gods, heroes, and humans reign supreme. Topographical and natural features serve as decoration, props (of setting or narrative), or symbols (of virtues or divinity). Even in the Archaic period, some painters seem to have taken interest in the landscape, as they strove to frame human actions in more complex and evocative contexts, but the portrayals of real places or “nature for its own sake” did not yet exist (Hurwit 1991: 53). Only do painters of the mid-fifth century seem to have taken steps toward more immersive landscapes, perhaps reflecting developments in monumental painting as well. Examples include a scene of Odysseus meeting Elpenor in a damp underworld on a pelike by the Lykaon Painter (Boston MFA 34.79) or the Niobid Painter’s portrayal of Apollo and Artemis hunting down the Niobids, their victims slumping across the uneven terrain that rises up to each side (Paris Louvre G341).

Ancient Greeks’ emotional responses to nature are maybe best reflected in the distribution of sites of religious activity, as recognized through textual or archaeological evidence. The commonplace that particular physical characteristics attracted reverence may seem suspect. Certainly some settings were circumstantial – an armed Athena or Aphrodite protecting an acropolis, Zeus in the agora, Hephaistos near the smithies (Mikalson 2010: 4–5); however, certain patterns become evident when sites and surroundings are considered. Prodigious sources might mark divine agency or presence. For example, Poseidon’s salt spring on the Athenian Acropolis or the sweet waters of Helikonian Hippokrene, struck by Pegasus. Shrines and sanctuaries rose up over Bronze Age remains, capitalizing on those vestiges, whether by harnessing memory or inventing new traditions (see Antonaccio 1994; Alcock 1997). The native charisma of promontories, mountains, caves, springs, and rivers inspired awe, wonder, and reverence. Rivers and mountains, as well as the encircling sea, were also important in determining territorial limits, another major factor guiding the emplacement of shrines. Subsequent developments were channeled by diverse and complex contingencies, largely economic and political.

Promontories were claimed for the gods, and by certain peoples. Temples of Athena and Poseidon at Sounion conspicuously marked the southeast extreme of Attic territory, a cusp between the Saronic Gulf and the full bore of the Aegean. Other headland temples include the temple of Apollo on a point beside the main harbor on Sicilian Naxos, and the temple of Hera just south of Kroton in southern Italy. Spectacular settings notwithstanding, more practical purposes were probably at work as well. Such sites were useful navigational

landmarks, marked human claims to the land, and enlisted protective deities (see Mikalson 2010: 5).

Mountains existed outside the day-to-day experiences and cultural norms of settled Greeks. In a practical sense, they offered seasonal pasturage, hunting grounds, and raw materials, but as ideational landscapes they were imbued with imaginative and often religious significance. Peaks attracted shrines of Zeus especially, as on Hymettos and Taygetos, but also of Helios, Artemis, Dionysos, Demeter, Pan, Apollo, and Hermes (Buxton 1992). They could be dangerous, such as being the realms of centaurs and other beasts, and places where a human might encounter divinity, for better or for worse, as exemplified by Hesiod's visitation by the Muses on Helikon (*Theog.* 22–34), or unfortunates seeing things they should not – Teiresias and Aktaion punished for surprising goddesses at their baths (Callim. *Hymn* 5). Gorges presented similar dangers, as Pentheus discovered when he surprised the Maenads in their well-watered vale (Eur. *Bacch.* 1023–1052).

In all of nature, nothing was more important than water (Pind. *Ol.* 1). It was always sacred, and wet places were always numinous, as witnessed by countless sanctuaries at sources, alongside rivers, and in water meadows and marshes. Spring-fed caves were especially evocative. These dark, enveloping spaces were mythologized as the haunts of monsters, places of divine births and upbringings, and routes to a netherworld. They also inspired notions of the proximity of, and access to, the superhuman, and those who entered opened themselves to possession and prophetic revelation. Systematic survey of Attic sites has suggested high interest and use of caves in the Classical period, and again in late antiquity, a pattern seen across Greece (Wickens 1986; Larson 2001). Many remained sites of rustic religious activity even as monumentalized urban and extraurban sanctuaries flourished. Others were incorporated into larger complexes, like the Ploutonion within the sanctuary of Demeter at Eleusis or the cave containing Iphigenia's tomb in the sanctuary of Artemis at Brauron (Larson 2001: 227). Water was always a part of rites of purification and healing.

Recent studies have largely shied away from seeing natural or physical qualities as governing the placement and rise of sanctuaries, emphasizing spatial and political factors instead. François de Polignac's study *Cults, Territory and the Origins of the Greek City-state* (1995) emphasizes the social and political roles of rural or extra-urban sanctuaries in emergent polis society. He articulates the practical and symbolic purposes of such sanctuaries of territorial mediation and sovereignty, as boundary markers, points of human meetings, rituals, and exchange as well as places of communication with the divine. Such marginal sites complemented urban shrines and sanctuaries, linking town and country and becoming important nodes in local and regional networks. Focused case studies provide opportunities for more nuanced views. Considering sanctuaries of Artemis, for example, Cole finds

that the distribution of her worship both “reflected the shape of the land and emphasized the relation of political territory to natural landscapes” (Cole 2004: 185). Her sanctuaries appeared in remote, resonant places, especially on mountainsides, by springs, rivers, or lakes, or on the seashore. When she was given sanctuary in town, hers was less developed than others, often set among rock formations or in a grove, as “Artemis brought the wilderness with her” (Cole 2004: 183).

FURTHER READING

Grove and Rackham 2001 explore Mediterranean climate and vegetation from antiquity to the present. Wylie 2007 is an excellent starting point for exploring the full range of landscape studies and human geography. Though not focused on antiquity, Cosgrove 1998 is highly readable and still very influential. In Ashmore and Knapp 1999, the editors’ lead article lays out useful definitions and themes; case studies in world archaeology follow. Contributions in Miller and Gleason 1994 focus on the excavation of cultivated contexts, while Carroll-Spillecke 1992 and Osborne 1992 reconstruct Greek gardens from images and texts as well as archaeological evidence. Hurwit 1991 and Roy 1996 explore landscape in art and drama, and Robinson 2011 (pp. 151–173) discusses architectural mimicry. Survey archaeology projects are on the rise, as reflected in numerous journal and anthology articles. For exemplary final reports and overviews, however, see Jameson, Runnels, and van Andel 1994, Cavanagh *et al.* 2002, Bintliff, Howard, and Snodgrass 2007, and Davis *et al.* 2008. For classical landscapes, Osborne 1987, Rackham 1990, and articles in Shipley and Salmon 1996 are natural starting-points, and Shipley 2006 offers a thoughtful case study. For sacred landscapes and the siting of sanctuaries, see articles in Alcock and Osborne 1994, and the detailed studies of Edlund 1987 and Cole 2004. For the imagined inhabitants and histories of landscapes, see Buxton 1992, Sallowey 1994, and Larson 2001.

REFERENCES

- Alcock, S.E. 1997. “The Heroic Past in a Hellenistic Present.” In P. Cartledge, Garnsey, and Gruen, eds., 20–34.
- Alcock, S.E. and R. Osborne, eds. 1994. *Placing the Gods: Sanctuaries and Sacred Space in Ancient Greece*. Oxford.
- Antonaccio, C.M. 1994. “Placing the Past: The Bronze Age in the Cultic Topography of Early Greece.” In Alcock and Osborne, eds., 79–104.
- Ashmore, W. and A.B. Knapp, eds. 1999. *Archaeologies of Landscape:*

Bevan, A. and J. Conolly 2004. "GIS, Archaeological Survey and Landscape Archaeology on the Island of Kythera, Greece." *JFA*, 29: 123–138.

Bintliff, J., P. Howard, and A. Snodgrass. 2007. *Testing the Hinterland: The Work of the Boeotia Survey (1989–1991) in the Southern Approaches to the City of Thespiiai*. McDonald Institute Monographs. Cambridge.

Bintliff, J. and B. Slapšak. 2007. "The Leiden–Ljubljana Ancient Cities of Boiotia Project 2007." *Teiresias*, 37 (2): 2–24.

Buitron-Oliver, D., ed. 1991. *New Perspectives in Early Greek Art*. Studies in the History of Art 32, Washington, DC.

Buxton, R. 1992. "Imaginary Greek Mountains." *JHS*, 112: 1–15.

Camp, J.M. 1982. "Drought and Famine in the 4th Century b.c." In *Studies in Athenian Architecture, Sculpture and Topography Presented to Homer A. Thompson*. *Hesperia*, Suppl. 20: 9–17.

Carroll-Spillecke, M. 1992. "The Gardens of Greece from Homeric to Roman Times." *Journal of Garden History*, 12: 84–101.

Cartledge, P., P. Garnsey, and E. Gruen, eds. 1997. *Hellenistic Constructs*. Hellenistic Culture and Society 26. Berkeley.

Casson, L. 1971. *Ships and Seamanship in the Ancient World*. Princeton.

Cavanagh, W., J. Crowel. R.W.V. Catling *et al.* 2002. *Continuity and Change in a Greek Rural Landscape. The Laconia Survey, Vol. I: Methodology and Interpretation*. London.

Cole, S.G. 2004. *Landscapes, Gender, and Ritual Space: The Ancient Greek Experience*. Berkeley.

Cosgrove, D.E. 1998. *Social Formation and Symbolic Landscape*. Madison.

Davis, J.L., ed. 2008. *Sandy Pylos: An Archaeological History from Nestor to Navarino*. 2nd ed. Princeton.

de Polignac, F. 1995. *Cults, Territory, and the Origins of the Greek City-State*. Translated by J. Lloyd. Chicago.

Edlund, I.E.M. 1987. *The Gods and the Place: The Location and Function of Sanctuaries in the Countryside of Etruria & Magna*

Graecia (700–400 B.C.). Stockholm.

Ghilardi, M., E. Fouache, F. Queyrel, *et al.* 2008. “Human Occupation and Geomorphological Evolution of the Thessaloniki Plain (Greece) since mid Holocene.” *Journal of Archaeological Science*, 35: 111–25.

Glacken, C.J. 1967. *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century*. Berkeley.

Gleason, K.L. 1994. “To Bound and to Cultivate: An Introduction to the Archaeology of Gardens and Fields.” In Miller and Gleason, eds., 1–24.

Goette, H.R. 2001. *Athens, Attica and the Megarid: An Archaeological Guide*. New York.

Greaves, A. 2000. “The Archaeology of Miletus.” In Oliver, ed. 111–116.

Grove, A.T. and O. Rackham. 2001. *The Nature of Mediterranean Europe: An Ecological History*. New Haven.

Hanson, V.D. 1998. *Warfare and Agriculture in Classical Greece*. Rev. ed. Berkeley.

Hayward, C.L. 2003. “Geology of Corinth: The Study of a Basic Resource.” In Williams and Bookidis, eds., 15–42.

Higgins, M.D. and R. Higgins. 1996. *A Geological Companion to Greece and the Aegean*. London.

Horden, P. and N. Purcell. 2000. *The Corrupting Sea: A Study of Mediterranean History*. Oxford.

Hunt, J.D., ed. 1992. *Garden History: Issues, Approaches, Methods*. Dumbarton Oaks Colloquium on the History of Landscape Architecture 13. Washington, DC.

Hughes, J.D. 1994. *Pan’s Travail. Environmental Problems of the Ancient Greeks and Romans*. Baltimore.

Hurwit, J.M. 1991. “The Representation of Nature in Early Greek Art.” In Buitron-Oliver, ed. 33–62.

Jameson, M.H., C.N. Runnels, and T.H. van Andel. 1994. *A Greek Countryside: The Southern Argolid from Prehistory to the Present Day*. Stanford.

Knapp, A.B. and W. Ashmore. 1999. “Archaeological Landscapes:

Constructed, Conceptualized, Ideational.” In Ashmore and Knapp, eds., 1–30.

Knauss, J. 1992. “Purpose and Function of the Ancient Hydraulic Structures at Thisbe.” *Boeotia Antiqua*, 2: 35–46.

Korres, M. 1995. *From Pentelicon to the Parthenon*. Los Angeles.

Larson, J.L. 2001. *Greek Nymphs: Myth, Cult, Lore*. Oxford.

Lolos, Y.A. 2002. “A Public Column Drum from a Corinthian Quarry.” *Hesperia* 71: 201–207.

MacDonald, W.A. and G.R. Rapp, eds. 1972. *The Minnesota Messenia Expedition: Reconstructing a Bronze Age Environment*. Minneapolis.

Matthen, M. 1997. “The Organic Unity of Aristotle’s World.” In Westra and Robinson, eds., 133–148.

McInerney, J. 2010. *The Cattle of the Sun: Cows and Culture in the World of the Ancient Greeks*. Princeton.

Meiggs, R. 1982. *Trees and Timber in the Ancient Mediterranean World*. Oxford.

Mikalson, J.D. 2010. *Ancient Greek Religion*. 2nd ed. Malden.

Miller, N.F. and K.L. Gleason, eds. 1994. *The Archaeology of Garden and Field*. Philadelphia.

Murray, O. and S. Price, eds. 1990. *The Greek City: From Homer to Alexander*. Oxford.

Oliver, G.J., ed. 2000. *The Epigraphy of Death: Studies in the History and Society of Greece and Rome*. Liverpool.

Osborne, R. 1987. *Classical Landscape with Figures: The Ancient Greek City and Its Countryside*. Dobbs Ferry.

Osborne, R. 1992. “Classical Greek Gardens: Between Farm and Paradise.” In Hunt, ed. 373–391.

Papageorgakis, J. and E. Koliati. 1992. “The Ancient Limestone Quarries of Profitis Elias near Delphi (Greece).” In Waelkens, Herz, and Moens, eds., 37–39.

Rackham, O. 1990. “Ancient Landscapes.” In Murray and Price, eds., 85–112.

Rackham, O. 1996. “Ecology and Pseudo-Ecology: The Example of Ancient Greece.” In Shipley and Salmon, eds., 16–43.

- Robinson, B.A. 2011. *Histories of Peirene: A Corinthian Fountain in Three Millennia*. AAAC 2. Princeton.
- Roy, J. 1996. "The Countryside in Classical Greek Drama, and Isolated Farms in Dramatic Landscapes." In Shipley and Salmon, eds., 98–118.
- Sallares, R. 1991. *The Ecology of the Ancient Greek World*. Ithaca.
- Salloway, C.A. 1994. "Herakles and the Waterworks: Mycenaean Dams, Classical Fountains, Roman Aqueducts." In Sheedy, ed. 77–94.
- Semple, E.C. 1922. "The Influence of Geographic Conditions upon Ancient Mediterranean Stock- Raising." *Annals of the Association of American Geographers*, 12: 3–38.
- Sheedy, K.A., ed. 1994. *Archaeology in the Peloponnese: New Excavations and Research*. Oxbow Monograph 48. Oxford.
- Shipley, G. 2006. "Landscapes of the Ancient Peloponnese: A Human-geographical Approach." *Leidschrift*, 21: 27–43.
- Shipley, G. and J. Salmon, eds. 1996. *Human Landscapes in Classical Antiquity: Environment and Culture*. London.
- Tartaron, T.F., T.E. Gregory, D.J. Pullen, *et al.* 2006. "The Eastern Korinthia Archaeological Survey: Integrated Methods for a Dynamic Landscape." *Hesperia*, 75: 453–523.
- Thompson, D.B. 1937. "The Garden of Hephaistos." *Hesperia*, 6: 396–425.
- Thompson, D.B. 1963. *Garden Lore of Ancient Athens*. Princeton.
- Tuan, Y.-F. 1990. *Topophilia: A Study of Environmental Perception, Attitudes, and Values*. Morningside Edition. New York.
- van Andel, T. and C. Runnels. 1987. *Beyond the Acropolis: A Rural Greek Past*. Stanford.
- Waelkens, M., N. Herz, and L. Moens. 1992. *Ancient Stones: Quarrying, Trade and Provenance. Interdisciplinary Studies*. Acta Archaeologica Lovaniensia Mongraph 4. Leuven.
- Westra, L. and T.M. Robinson, eds. 1997. *The Greeks and the Environment*. Lanham, New York.
- Whitbread, I.K. 2003. "Clays of Corinth: The Study of a Basic Resource for Ceramic Production." In Williams and Bookidis, eds., 1–13.

Wickens, J.M. 1986. "The Archaeology and History of Cave Use in Attica, Greece, from Prehistoric through Late Roman Times." 2 vols. PhD dissertation: Indiana University.

Williams, C.K., II, and N. Bookidis, ed. 2003. *The Centenary: 1896–1996. Corinth 20*. Princeton.

Wylie, J. 2007. *Landscape*. London.

CHAPTER 2

Early Greek Temples

Alexander Mazarakis Ainian

From the House of Rulers to the House of the Gods

The development of the Greek temple into the form it finally acquired in the Classical period followed not only a long but also a diversified trajectory. From the extant material evidence it would seem that we should seek the first stages in this long and complex process in the religious prerogatives held by the members of the new ruling elites that emerged at the dawn of the Early Iron Age after the collapse of the Late Bronze Age palatial system. The members of these elites, perhaps holding the title of *basileis*, naturally derived much of their power from their bravery and skills as warriors, their possession of arable land, or their connection with trade and the supervision of the metals industry, especially that of iron. But another significant source of prestige was derived from their religious duties and their ability to offer feasts (because of their material wealth), often cultic in nature, to the community (on the early symposium see Wekowski 2014).

Communal religious ceremonies were doubtless performed inside or in proximity to these elite dwellings (Mazarakis Ainian 1997). In fact, by the eleventh century BCE, when the remnants of the palatial system had completely faded away, cult practices apparently returned to the earlier Middle Helladic scheme, which consisted of cults “celebrated at every household hearth by every head of household” (Wright 1994: 75). The Mycenaean palatial *megaron*, with its monumental central ritual hearth, which “demonstrates the priority of religion in the organization of the seat of power,” may have also accommodated cult activities (Wright 1994: 58). These were presumably transferred to the more humble dwellings of the ruling nobility of the LH IIIC and especially of the Early Iron Age. Sanctuaries outside settlements were no longer controlled by some kind of central authority as in the Late Bronze Age. These changes may have marked the origin of the Panhellenic sanctuaries, which could not have been appropriated by petty “states” as previously by the palace but became instead the meeting places of the aristocracy and a neutral ground where noblemen would compete (Morgan 1990). On the other hand, numerous important and lesser sanctuaries were founded in the borders of the rising states in order to assure territorial claims (de Polignac 1995). This last model, however, cannot

be applied all over the Greek world, especially not to islands, where such territorial claims did not always exist, since often the island was under the control of a single polis.

In the beginning of the first millennium (eleventh to tenth centuries BCE) the space of the living in relation to that of the gods was not clearly separated (Sourvinou-Inwood 1993; Mazarakis Ainian 1997). There is clear evidence for cult activities in relation to dwellings of the elite, for instance at Nichoria (Unit IV-1), Asine (Unit 74L-M), Lefkandi-Toumba (Popham, Calligas, and Sackett 1993), and various sites in Crete (Karphi, Vronta, Prinias, Smari, and elsewhere) (on these see in general Fagerström 1988; Mazarakis Ainian 1997). The case of Thermon (Megaron B), despite recent research, remains problematic, though the hypothesis developed long ago that Megaron B was a ruler's dwelling that also served for cult activities still appears to be the most likely one (Papapostolou 2012).

Such activities associated with rulers' dwellings persist during the Geometric period (ninth to eighth centuries BCE), since, among others, these dwellings were often situated in proximity to a communal hypaethral cult place (e.g., Lathouriza, Eretria, Zagora, Aigeira, Emporio, Phaistos). A "ruler's dwelling" often comprised a spacious room provided with stone benches for sitting and a central hearth. Often, the evidence attests to the practice of large-scale feasts. In the places where such a pattern can be observed, a contemporary temple of a polis-divinity is usually absent or a latecomer in the development of the site (Mazarakis Ainian 1997).

Towards the end of the eighth century BCE, the ruling nobility started losing its exclusivity in the management of communal matters, which now became a collective affair of the communities, or at least of a much wider proportion of the communities. It is behind such social and political changes that we should seek the emergence of the idea of the first "urban" temples, best illustrated by the case of the Sanctuary of Apollo at Eretria. Indeed, the ritual activities once performed inside the dwellings of the ruling elite had to be transferred inside communal buildings, which may be qualified as "urban" temples.

Today it is widely accepted that the presence of a temple dedicated to the cult of a polis-divinity is a clear sign denoting the rise of the polis, since its presence presupposes the existence of communal institutions (Snodgrass 1977: 25–30; Powell 1991: 195–196). Several features related to their architectural form derive from the earlier dwellings of the elites. The monumental apsidal building of the mid-tenth century BCE at Lefkandi-Toumba, for instance, which presumably served either as a "palace" or as a large-scale "funerary palace" was provided with a "peristyle," which from circa 700 BCE came to characterize several temples (Popham, Calligas, Sackett 1993). The peristyle (*peristasis*) consists of a series of upright columnar supports that surround an inner building, and it would become a characteristic feature of Greek architecture.

The first urban hekatompedon at Eretria took over the apsidal form of the earlier dwellings of the nobility (see [Figure 2.1](#)). Occasionally, earlier rulers' dwellings, such as the LH IIIC Megaron T at Tiryns, were converted into temples. More often, however, the new homes of the gods were built on top of (Thermon) or besides (Eretria, Zagora, Emporio) such dwellings. Additionally, a new phenomenon emerged: that of the honoring both remote ancestors and recently deceased individuals who had earned distinction through their deeds (Antonaccio 1995; Mazarakis Ainian 2004). Within the rising polis, the "Age of the Heroes" became a distant time, but it was remembered through the practice of such cults in several places of the Greek world.

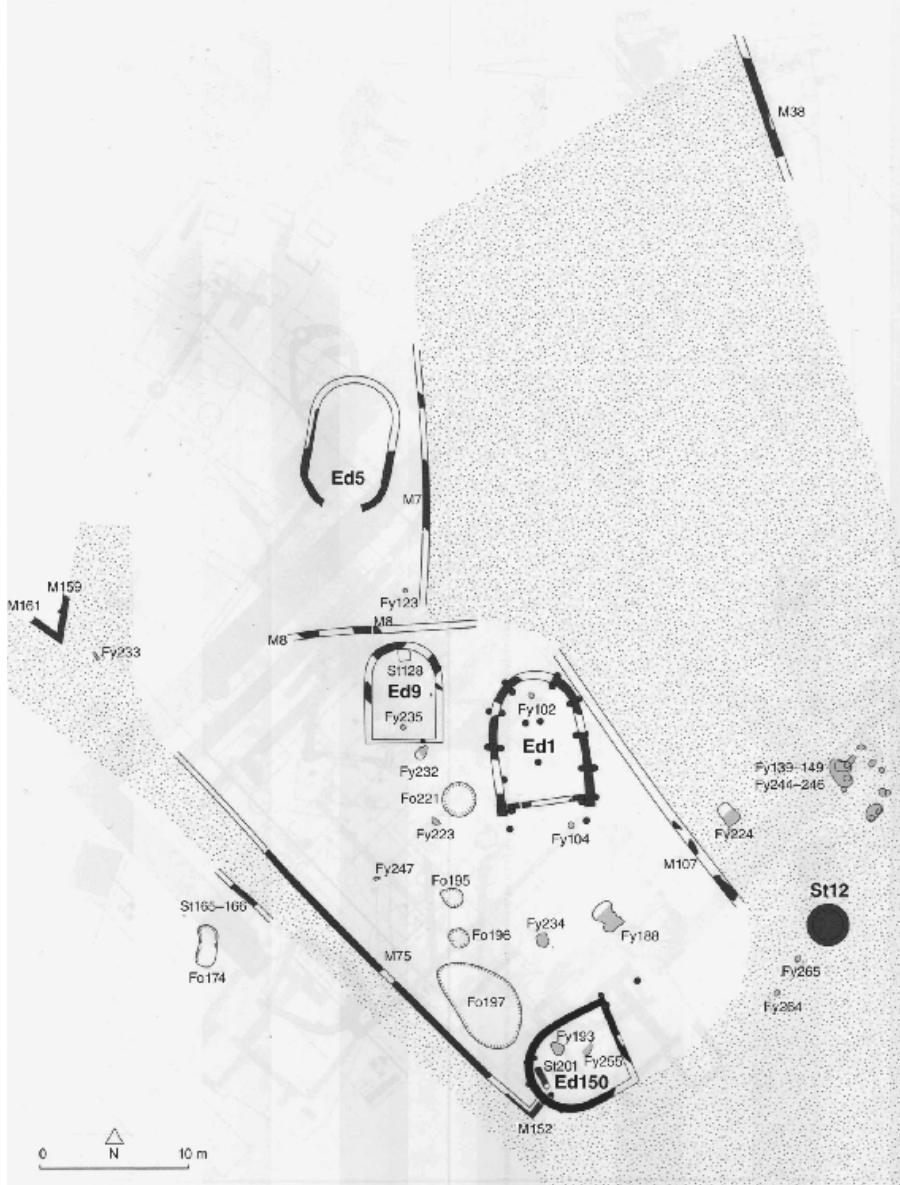


Figure 2.1 Eretria, first half of the eighth century BCE, plan.

Source: adapted from Verdan 2013, pl. 7.

The Emergence of the Greek Temple: Proto-geometric Cult Buildings

The older cult buildings of the Early Iron Age have been found in suburban or extra-urban sanctuaries. At Ay. Irini on Keos, cult activities continued

uninterrupted within the partly reused Late Bronze Age cult building. A clay head from a prehistoric statue was reused in the eighth century BCE and was carefully positioned on a cylindrical clay base in order to serve as a cult image of Dionysus. It is not easy to know, however, whether this head was accidentally discovered or whether it was piously kept inside the Early Iron Age cult edifice from generation to generation. Even though its original significance was gradually lost (the head with the pointed chin that belonged to a female terracotta statue was perhaps regarded by the eighth century BCE as a bearded head of Dionysos), it was doubtless considered holy (Mazarakis Ainian 1997: 170, with references; Gorogianni 2011). Several other examples of cult continuity from the Late Bronze Age to the Early Iron Age are today well documented from all over the Aegean. One of the most striking is at the oracle Sanctuary of Apollo at Kalapodi (ancient Abai; cf., Hdt. 1.46), in Phocis, where an impressive series of cult buildings from the Late Bronze Age (Temple 1, from the late 15th century BCE onwards) to the Early Iron Age and into the Archaic period has been brought to light ([Figure 2.2](#)). The fourth South temple belongs to the Protogeometric period and was apsidal, measuring 12.00 × 4.50 m, and oriented towards the west (Niemeier 2009; Niemeier 2011; Niemeier 2013).

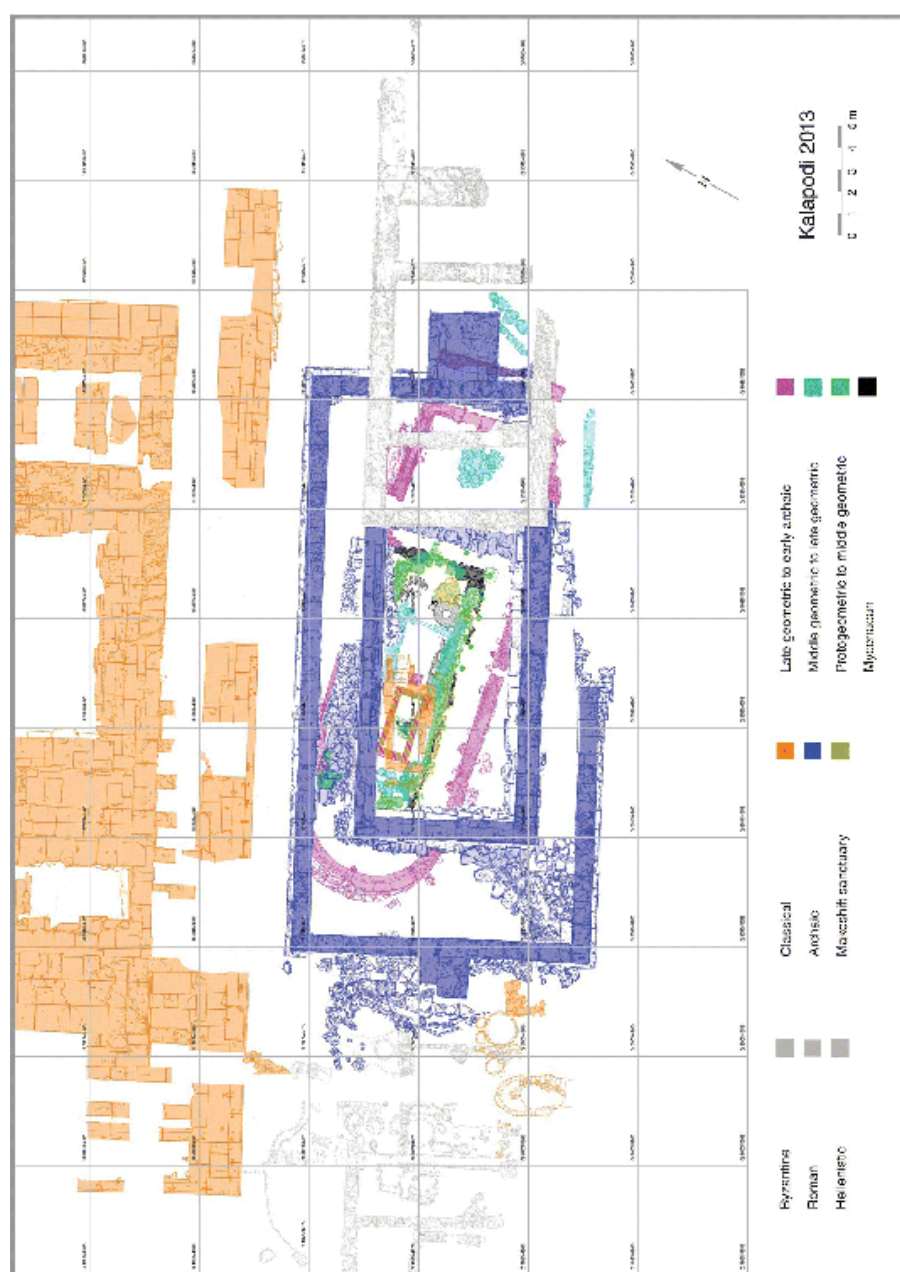


Figure 2.2 Kalapodi, South temples. Architectural phases of South temples.

Source: DAI, courtesy W.-D. Niemeier.

Uninterrupted cult continuity is widespread on Crete, especially in sacred caves and rural sanctuaries. One of the earliest temples of the Early Iron Age has been found at Kommos (Temple A); it was in use from the late eleventh century up to the ninth century BCE, when it was replaced by a similar temple, B. The temple was a rather small rectangular edifice, provided with

benches along the long sidewalls and a hearth, and definitely served also for the practice of ritual meals (Shaw & Shaw 2000). Interestingly, one of the earliest cult buildings of the Greek World has been found in the diametrically opposite side of the Aegean, at Poseidi on the Chalkidike peninsula, in Macedonia. This sanctuary, which later became the suburban Sanctuary of Poseidon of the Eretrian colony of Mende, revealed a very early apsidal cult building (ΣΤ), associated with extensive burnt sacrifices (Moschonisioti 1998). It is notable that several of these early cult buildings are found in extra-urban sanctuaries that were located along important communication routes, either on land (Kalapodi) or at sea (Kommos, Ay. Irini on Keos, Poseidi) (in general, see Mazarakis Ainian 1997; Lemos 2002).

The Birth of the Panhellenic Sanctuaries and the Development of the Temples

Until the middle of the eighth century BCE, the sanctuaries within settlements usually had no cult buildings, while those of the sub- or extra-urban sanctuaries seem to have been of small dimensions. The Panhellenic sanctuaries are all already mentioned in the Homeric epics (Olympia: *Il.* 2.519. *Od.* 8.79–81, 11.581, 697–701; Delphi: *Il.* 2.519. *Od.* 8.79–81, 11.581; Delos: *Od.* 6.162–167; Dodona: *Il.* 16.233–235. *Od.* 14.327–328, 19.296–297). In the epics we also hear of a number of other sanctuaries, most of which flourished during the Geometric period. Among these is: the Sanctuary of Helikonian Poseidon (*Il.* 8.203; 20.403–405), which is probably the Geometric sanctuary with its apsidal temple, recently excavated at Nikoleika (ancient Helike) in the northern Peloponnese (Kolia and Gadolou 2011; Kolia 2011; see Figure 2.5); the sacred cave of Eileithyia at Amnisos (*Od.* 19.188–190); the Sanctuary of Aphrodite at Paphos (*Od.* 8.362–363); of Poseidon at Onchestos (*Il.* 2.506); of Poseidon at Geraistos in Euboea (*Od.* 3.177); and of Apollo in Ithaca (*Od.* 20.278). The passage in the *Odyssey* (7.80–81), in which Athena visits the “mighty house” (πῦκτινον δῶμον) of Erechtheus in Athens is well known, as is that in the Catalog of Ships in which the goddess receives Erechtheus in her temple (*Il.* 2.549) (Crielaard 1995b: 255–262; Mazarakis Ainian 2011b; Luce 2010). These passages support the hypothesis that rulers had a privileged relation with the gods, but they also suggest an early date for the origins of cult activities upon the Athenian Acropolis, which appears originally not only to have been the seat of power but also a major habitation area of early Athens (Gauss and Ruppenstein 1998; Papadopoulos 2003).

Founded in neutral areas (including the Panhellenic ones), the sanctuaries were mostly visited by the contemporary elites, who employed them as arenas of competition and for the display of wealth (Morgan 1990). The early

traditional date of the first Olympiad in 776 BCE may reflect this social custom, with the establishment of such competitions between the members of the elite. The Pan-Ionian sanctuary on Delos was apparently the area of competition between Naxians and Parians, though the latter do not seem to have been as affluent as the former before the middle of the sixth century BCE. This could explain why another sanctuary, dedicated to Apollo and Artemis and with a similar character and extent (at least in the Archaic period), developed in parallel with the Delian one on the small island – or perhaps peninsula at that time – of Despotiko (ancient Prepesinthos), southwest of Antiparos. Despotiko never attained the fame of Delos and seems not to have been mentioned by ancient authors. The recent excavations have proved that the sanctuary was already in use during the Geometric period and that there was perhaps an apsidal or oval cult building dating to this period beneath the Archaic cult complex (Kourayos 2012).

Altars, Cult Bases, Votives, and Dining Facilities

The focus of cult in Greek sanctuaries, since the beginning of the Iron Age, was the altar. These often preceded the construction of temples, as the well-known long series of the Heraion of Samos and several other examples show. The ash altar of Zeus in Olympia formed the center of cult until late antiquity (Paus. 5.13.8–11); however, recent studies have proved that in the Early Iron Age there existed nearby, to the south, a spacious apsidal building, Unit 7, measuring approximately 7.78 m in width and 20–25 m in length. This monumental edifice may have been the first Temple of Zeus, destroyed in the Early Archaic period by fire. The remains of an old wooden column seen and identified by Pausanias (5.20.6–7) as belonging to the house of the legendary king Oinomaos may have once belonged to this building (Rambach 2002; Duplouy 2012: 108–109).

The hypothesis that the first temple of Apollo on Delos was a small rectangular building (Building Γ) is not unproblematic. If such were the case, one could compare it with other similar small edifices, which have been discovered in various sanctuaries of the Geometric era, like the Heraion of Perachora or the sanctuary of Athena Alea at Tegea, and which appear to have served for the protection of valuable offerings and/or the housing of the cult statue of the deity. Indeed, as well as at Keos, mentioned previously, bases for the positioning of cult images have been revealed at the first hekatompedon in the Heraion at Samos and against the back corner of the Temple of Apollo Delphinios at Dreros. In the latter, bronze cult images of the Apollonian triad were found *in situ*.

At Kalopodi, the oval South Temple of the Middle–Late Geometric period (South Temple 6, [Figure 2.2](#)) measures 13×4 m. Its orientation was perhaps changed from west to east, something unusual for a sacred building. The new temple contained a stone base for a wooden *xoanon* near the short west back end. The *xoanon* (cult image) would have been a wooden plank, like the one at Samos, and was destroyed in a ritual fire together with the temple and its numerous offerings, including weapons, during the second half of the eighth century BCE (Niemeier 2011). This ritual reminds us of a similar destruction of the so-called heroön at Lefkandi, some two hundred and fifty years earlier.

The cult at the Artemision of Ephesos dates back to the Protogeometric period, but the earliest cult building dates to the mid-seventh century BCE. The presence inside the first temple of a large, elongated base (3.95×1.75 m) and the incidence of several valuable jewels in the area, which could belong to a cult statue composed of perishable materials, have been considered as indications that a monumental cult statue may have been positioned here (Bammer 1990: 150–153; 1991). This reminds us of the literary description of the statue of Athena in her temple at Troy, which appears to have been seated and of sufficient size to receive the largest of Hecuba's robes (*Il.* 6.273). All this would accord well with the function of the *nêos* in the Homeric epics, namely that a cult building was regarded as the house in which the divinity occasionally resided, and was thus practically always provided with its cult image. Yet, in recent years, scholars prefer to identify the base in the temple of Ephesos with an interior altar or *eschara* similar to those of the temples of Athena at Zagora and Emporio (Weißl 2006: 192; Kerschner and Prochaska 2011: 80–82). A raised mud brick altar was also incorporated inside the Late Geometric temple at Nikoleika (see later discussion).

By the Archaic period, bases for the positioning of cult images were constructed in many temples, though the actual cult statues are now usually lost. In exceptional cases, some of these statues have been preserved, though they often do not conform to what we would have expected based on our written sources and what has been considered the norm until recently. We have seen that at Dreros there are three images instead of just one. This was probably not such a rare occurrence: for instance, at the Archaic Temple of Apollo at Metropolis near Karditsa (Thessaly) a base in the interior also seems to have supported more than one statue; one of them was found almost intact, fallen in front of the base. Astonishingly, it represents an armed hoplite brandishing his spear, looking more like Ares than Apollo. Moreover, the base is located in the middle of the temple and not towards the back end (Intzesiloglou 2002).

Apart from housing the cult image, temples served as treasuries for a number of votive offerings, which were often precious. It is quite rare to unearth a temple with most of its furnishings and offerings still in place. The votive deposits, however, provide us with a general idea of the categories of artifacts

that were once on display at sanctuaries, some of them surely within or in close relation to the temple. Rarely do we find these votive articles in their original position: a case in point is the Archaic South temple at Kalapodi, which was destroyed by the Persians: excavators found the weapons and chariot wheels that were once suspended from the columns of its peristyle. In the Geometric predecessor of the South temple at Kalapodi, a number of votives, including an impressive set of iron swords, were buried beneath its ruins during a ritual conflagration, which intentionally destroyed the temple (see above Temple 6). Such acts may not have been isolated and may be observed in various places and in later periods too. At Kythnos in the Cyclades, for instance, in the temple identified as that of Apollo and Artemis (?), probably built around 675 BCE, the Archaic dedications were piously placed inside the “adyton” after some destruction that disrupted the architectural history of the edifice in the late Classical–early Hellenistic period (Figure 2.3; Mazarakis Ainian 2005; 2010). Despite the fact that the reorganization of the votive objects supports the idea of an artificial “staging” of a frozen scene, the types of votive items are presumably representative of those that would have been kept inside the temple throughout the Archaic period. Something similar may be observed in the Heraion of Delos, where the earlier cult building (I) with its votive offerings was concealed inside Temple II of the late Archaic period.



Figure 2.3 Aerial view of the temple at Kythnos. The “adyton” in the middle. [North at the top] (photo K. Xenikakis, 2014).

Source: A. Mazarakis Ainian.

The archaeological record shows that early temples often had yet another

function, closely associated with the ritual activities that followed the animal sacrifices at the altar: their function as ritual dining halls (i.e., *hestiatoria*). Ritual meals are, of course, attested in the open air, too, as at Samos or Isthmia (Kron 1988; Morgan 1999: 319–320), or in relation to cult buildings, which more closely resemble houses than temples, as at the later Academy of Plato (Mazarakis Ainian and Alexandridou 2011) or Eleusis (Mazarakis Ainian 1999). A good example for dining within the temple is Kommos on Crete (Shaw & Shaw 2000). There, the presence of benches, hearths, and the numbers of animal bones, mollusks, drinking and eating vessels, as well as iron spits from the interior and the exterior of the temple, indicate the organization of ritual banquets from the Geometric period onwards, and perhaps even earlier. Another good example illustrating this function is the Late Geometric monumental temple in the extra-urban Sanctuary of Iria on Naxos (Lambrinoudakis 1991). Its interior is divided into four naves by three rows of wooden columns. The presence of a hearth and benches along the sidewalls, as well as the burnt and unburnt animal bones, attest to sacrifices and ritual banquets that were taking place inside this temple, too. The possibility cannot be excluded that one of the reasons builders started increasing the dimensions of temples during the second half of the eighth century BCE would have been the need for adequate space for participants in these sacred communal banquets.

Indeed, the first monumental temples appear towards the end of the eighth century, several of which were *hekatompeda* or “hundred-footers.” In the suburban Sanctuary of Hera at Samos a series of altars has been detected, the earliest of which has been dated to the end of the ninth century, while the first hekatompedon was constructed one century later. An impressive stone bench probably ran along the long sides of the edifice, suggesting the presence of numerous worshippers, probably for the practice of ritual meals inside the temple.

At the suburban Sanctuary of Apollo at Kalapodi (Figure 2.2), a new apsidal “South temple 7” was built at the beginning of the eighth to the seventh century BCE, this time monumental in size (24.60 × 7.60 m). Another even more monumental temple was built immediately to the north. Both temples remained in use until the first quarter of the sixth century BCE. The South temple yields the remarkable discovery of fragments of wall paintings depicting hoplites in battle with which the interior was decorated during the mid-seventh century BCE (Niemeier 2009; Niemeier 2012). Thus, in addition to the well-known examples of early temples with interior decoration, such as the Temple of Poseidon at Isthmia, the Temple of Apollo at Corinth, and the second hekatompedon of Hera at Samos, this is the fourth early Archaic temple that was decorated with frescoes (Moormann 2011: 43–44).

At Eretria (Figure 2.4), the first urban apsidal hekatompedon (Ed2) of the last quarter of the eighth century BCE encroached upon an aristocratic residential

area, where large-scale banquets following sacrifices around the altar (St12) would have taken place throughout the eighth century BCE. The apsidal and oval edifices in this area appear to have been the dwellings of the members of the elite. One of the apsidal edifices (Ed150) may have had a communal function from the beginning, however, perhaps serving for the performance of communal ritual banquets. This hypothesis mainly rests on two arguments: the orientation of Ed150 towards the altar and the presence of a clay base at the back of the building, upon which the foot of a large Attic Middle Geometric II krater was placed. Ed150, which was built in the beginning of the Late Geometric period, was still in use when the hekatompedon temple (Ed2) was built towards the end of the same period. It is not ascertained whether Ed1 (the so-called Daphnephoreion) was also still in use at the same time, though the excavators argue that it was not. If, however, Ed150 continued to serve as a banqueting hall after the construction of Ed2, it is not easy to accept that the new edifice also served for such ritual banquets. The monumental temple doubtless served for positioning and keeping safe the valuable votive offerings, a few of which were found fallen on the floor, though no evidence for a base for a cult statue was uncovered. In any case, it is today beyond doubt that the sanctuary with the monumental temple of the polis-divinity of Eretria developed within the habitation quarter of the elite, as was suggested long ago (Mazarakis Ainian 1997: 57–61, 102–103; Verdan 2013). Whether it served also for the practice of ritual meals is a question that cannot be answered on the available evidence.

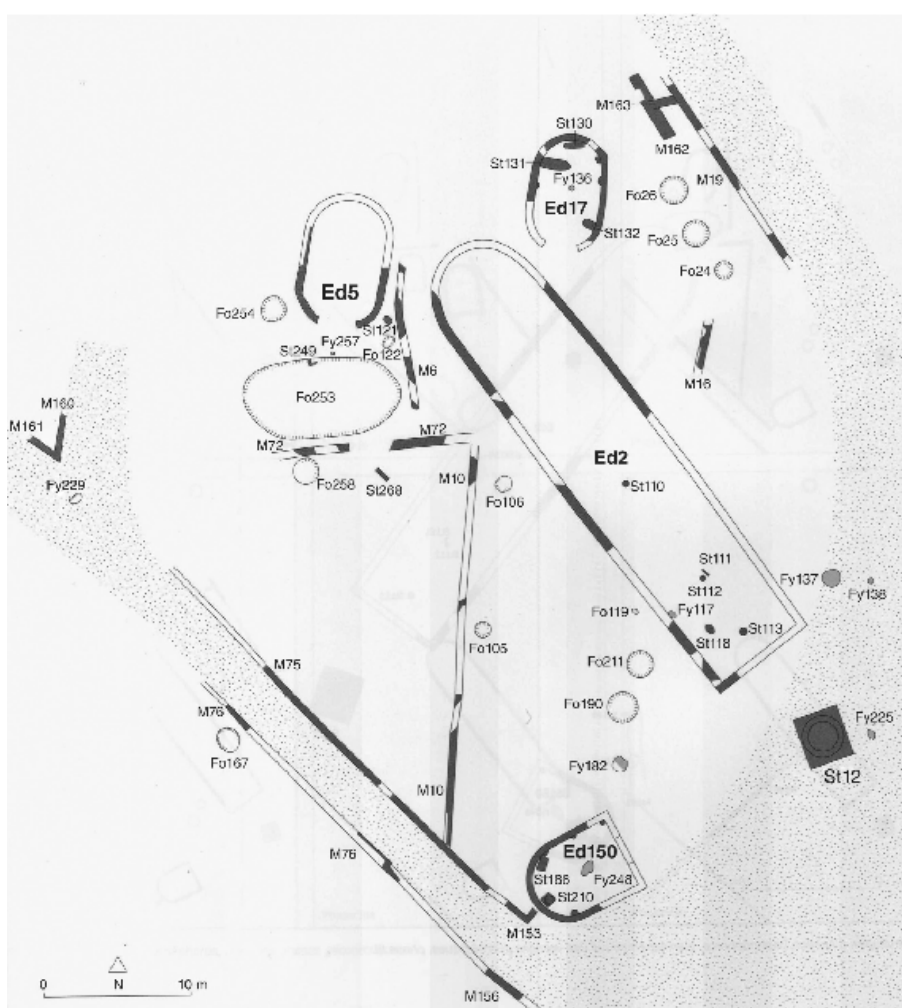


Figure 2.4 Eretria, second half of the eighth century BCE, plan.

Source: adapted from Verdan 2013, pl. 8.

The Early Use of the Peristyle

Such monumental temples, like the ones at Samos, Kalapodi, or Eretria, were doubtless impressive, both in their general exterior appearance and in their interior furnishings and decoration, and illustrate what could be built and dedicated to the gods in the period between the late eighth and early seventh centuries BCE. Another monumental temple of Apollo, surrounded by a peristyle of wooden posts, was found in southern Euboea, at Zarakes. Both the estimated monumental dimensions of the Late Geometric temple and the stoa of wooden posts provide a possible indirect link with the much earlier

“heroön” of Lefkandi-Toumba. Indeed, the existence of posts surrounding edifices is a typical characteristic of Geometric architecture both in Euboea and Oropos across the gulf (Mazarakis Ainian 2001); the explanation of the origins of the genesis of the *peristyle* of the Greek temple could lie in this feature (as will be discussed). Even in remote places, such as the mountainous rural Sanctuary of Artemis Aontia at Rakita (Ano Mazaraki), in Achaea, monumental but “idiosyncratic” temples started being built. Here, a Late Geometric apsidal hekatompedon with back adyton and with an unusual peristyle, where the wooden columns stood on independent stone bases (instead of a continuous stylobate), was found. The five columns of the porch surround the façade in a semicircle (Petropoulos 2002).

This unusual arrangement is repeated in the horizontally curved front of the originally apsidal Late Geometric temple at Nikoleika (ancient Helike), probably to be identified with the temple of Helikonian Poseidon mentioned in the epics (*Il.* 8.203; 20.403–405) (Figure 2.5). The curve is a continuous stylobate formed with ashlar blocks for the support of the wooden columns. Perhaps this unusual feature represents a local Achaean architectural style. The discovery approximately in the center of the temple, of a square altar of mud bricks (approximately 1.30 m wide, 0.59 m high) is important. The altar was in place several generations before the construction of the temple and was subsequently incorporated into it with respect when the latter was built (a Protogeometric structure may have existed towards the east, though the cult at that time may have been performed in the open air). It is not yet known whether the spacious temple (width approximately 7 m, preserved length 8 m, estimated to be about 20 m) stood within a settlement. An apsidal edifice was recently partly excavated nearby, to the northeast, but it is not clear whether it belongs to the sanctuary or to a surrounding settlement (Kolia and Gadolou 2011; Kolia 2011: 203).

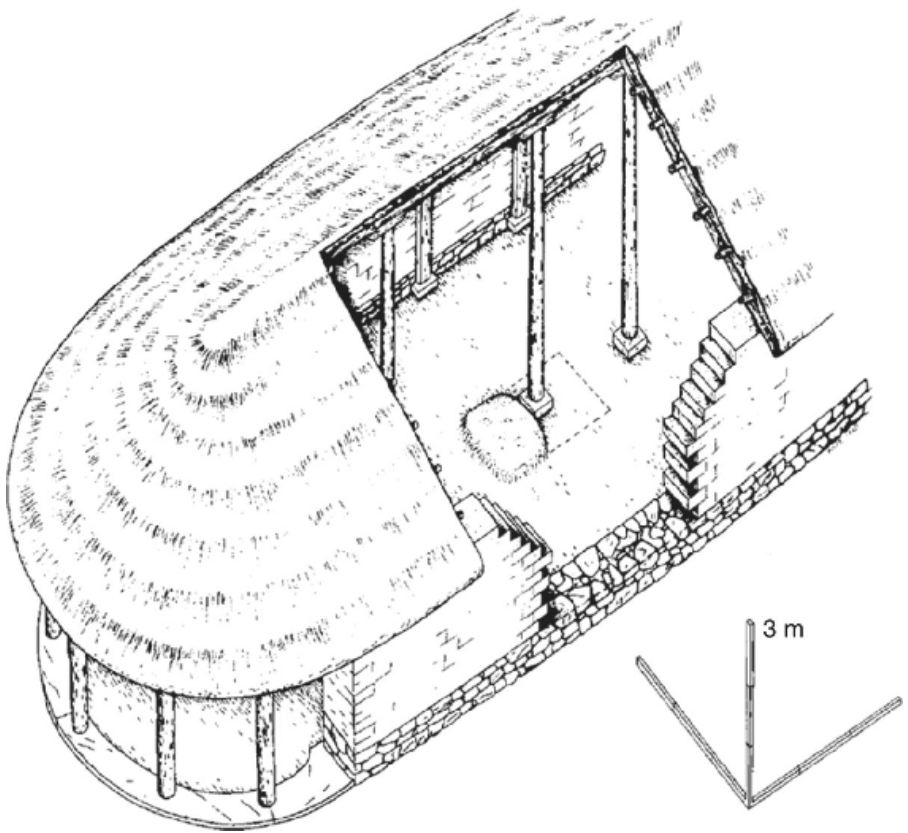


Figure 2.5 Nikoleika, temple, reconstruction.

Source: adapted from Kolia 2011, fig. 46.

The Peristyle in the Early Archaic period

The seventh century saw major innovations in architectural forms, both in the secular and the sacred context. Temple architecture is characterized by monumentality, the use of worked stone, the invention and use of roof tiles, the adoption of the peristyle by several temples. The Temple of Apollo at Corinth and the temples with a peristyle at Isthmia, Argos, Thermon, Samos, and Ephesos are typical of this architectural bloom. In the Northeast Peloponnese, around 700 BCE and into the first half of the seventh century BCE, we observe innovations and experimentations in temple architecture and also a great advance in the choice of materials and in building techniques, together with an increasing communal investment of wealth, leading to the construction of monumental temples. The Temple of Apollo at Corinth was built with dressed stone blocks and was covered with the earliest clay roof tiles of the Iron Age. The first securely identified peripteral temple in the

Corinthia was constructed one generation later at the Sanctuary of Poseidon at Isthmia. This temple, decorated externally with colored panels, would have been an awesome sight. It should be underlined that the case of Isthmia is highly instructive for our understanding of the rise of Greek sanctuaries, providing as it does the opportunity to observe how it evolved from the Protogeometric period open-air sanctuary down to the early Archaic period (Morgan 1999). The roughly contemporary peripteral temple of the Argive Heraion at Prosymna is based on a terrace, founded on a massive terrace wall built in pseudocyclopean masonry, which can be dated to circa 700 BCE. It has been suggested that the chosen masonry might reflect the will of the Argive people to emphasize their heroic ancestry (Wright 1982).

Gradually the peristyle became one of the main characteristics of the Greek temple. The question is whether it first appeared in the Northeast Peloponnese, in Ionia, or in Sicily, or even whether its origin can be related to a common source. The data seem to indicate that its appearance was not a homogeneous phenomenon. The origin of the Ionian peristyle should be sought in the East, that of the northern Peloponnese, in Egypt, which likely also provided the inspiration for the Doric temple. The case of the Temple of Artemis at Ephesos is quite instructive. Beneath the temple dated to the reign of Kroisos, the remains of an older peripteral temple came to light, which can be placed in the middle of the seventh century BCE (Bammer 1990; 1991; Kerschner and Prochaska 2011). The interior columns, as well as those of the peristyle, were made prior to the temple walls, suggesting that they might have also aimed at its protection from the weather conditions. This reminds us of the peristyle of the so-called heroön at Lefkandi, dating from about three centuries earlier, which might have had a purely functional role. Similar stoas, formed by wooden posts, surrounded apsidal and oval buildings in the eighth century BCE at Eretria and Oropos (Mazarakis Ainian 2001). The examples that have been noted here suggest that the peristyle has its roots in domestic architecture. How and why this functional element of Greek monumental architecture acquired a symbolic character, which generally limited its use to temples, at least in the Archaic period, remains an open question.

Yet at the same time that we witness such major advances in building materials and techniques, as well as in architectural forms, in other areas of Greece we observe a conservatism that makes the Archaic period in these areas not much different from the Geometric period that preceded it. Some temples of the Archaic period with an unusual design are the temples of Apollo at Soros and at Metropolis in Thessaly (see in general Morgan 2003) and the Temple of Demeter at Hypsile on Andros, and there are many more. Moreover, in some sanctuaries, temples that had been constructed in the Geometric period and were still in use during the following centuries would have appeared very old fashioned already by the end of the seventh century BCE. As typical examples, we could cite the apsidal temple at Ano Mazaraki,

surrounded by its awkward peristyle and front porch, the first temple of Athena at Old Smyrna, or the so-called Sacred House at Tourkovouni. The case of Soros in Thessaly is also eloquent of such variety and is presented in more detail here.

The Temple of Apollo at Soros

Soros, in Magnesia, Thessaly (in the suburbs of modern Volos), is usually identified with Archaic–Classical Amphanai but is occasionally linked to Pagasai as well (Eur. *HF* 392; Strabo 9.435). Here, an interesting temple-*hestiatorion* of the Archaic period, dedicated to Apollo, has been investigated (Milojčić 1974, figs. 22–37; Mazarakis Ainian 2009; 2011c; 2012). The suburban sanctuary was delimited by a temenos wall, a long portion of which was uncovered at the east end (T15). It is provided with a rectangular-stepped entrance, 2.00×2.60 m, similar to that of the adjacent temple.

The temple is an oblong oikos, measuring 22.42 m (24.32 m, porch included) $\times$ 8.33 m (Figure 2.6). The walls are preserved to a maximum height of approximately 1 m, but it seems likely that the remaining superstructure would have been constructed with mud bricks. The pronaos (Room B), with its stepped entrance, was added at a later period, perhaps at the same moment that a side square room (Γ) was built at the southeast of the temple's façade. The pronaos was literally blocked with numerous stone offerings of the Classical period (stone bases, some bearing inscriptions; three statues of children, including a crouching boy; a relief stele representing Apollo and a young worshipper; a Panathenaic amphora of 336–35 BCE). A secondary entrance was located in the middle of the north long wall. The roof of the cella, formed by Laconian roof tiles, was supported by a row of 10 wooden posts resting on rectangular stone bases. In the interior (Room A), between the sixth and seventh base, there was a hearth. A channel for liquid offerings was recovered at the southeastern corner, carved in the rock. It passes underneath the cella's threshold and communicates with the large cavity found in the pronaos, which contained numerous mollusks (mostly murex shells). This channel looks a lot like the one found on Delos in the early Archaic "Oikos of the Naxians" (see later discussion). A pi-shaped stone bench ran alongside the walls; it is 0.45 m high and initially was about 0.50 m wide, but subsequently its width was doubled.

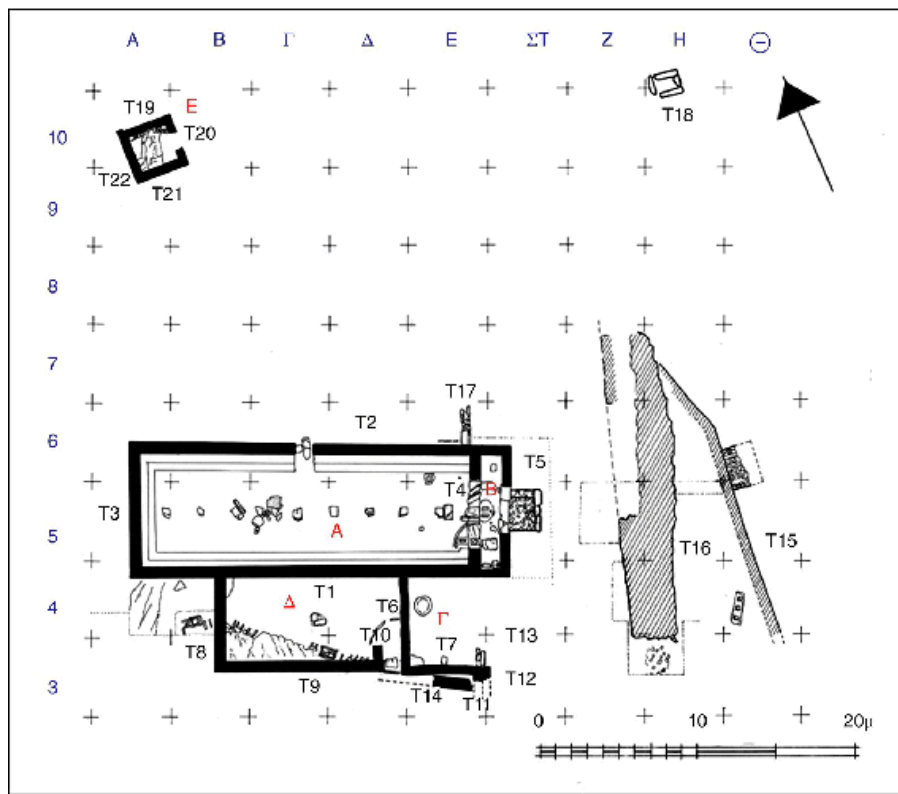


Figure 2.6 Soros, Sanctuary of Apollo, topographical plan.

Source: A. Mazarakis Ainian, G. Chiotis.

Beneath the floor of the temple, which was of beaten earth, several cavities were uncovered in the soft bedrock. Moreover, several thin disk slabs were encountered, removed from their original position. Both features seem to belong to an original phase of the sanctuary, and they bring to mind various Cycladic parallels, such as Xobourgo on Tenos (Kourou 2011), Melanes (Lambrinoudakis 2005), and Sangri on Naxos (Lambrinoudakis 2001; Gruben and Lambrinoudakis 2002). Moreover, before the construction of the Archaic temple there was a small oikos measuring 3.40 m on a side (Building E), which may have been constructed in the seventh century BCE. Its function has not been elucidated yet, though it is not impossible that it may have served for the housing of the cult image and, subsequently, when the temple-hestiatorion was constructed, as a treasury. Indeed, since Building E remained in use alongside the Archaic temple its function may have been altered in the course of time.

On the south side of the Archaic temple, a separate room, labeled Room Δ, was added rather late in the history of the sanctuary. A series of cists made of slabs were found set one next to the other in a row beneath Room Δ. At the eastern edge of the cists, an enigmatic semicircular construction, formed by

vertical slabs, was uncovered. Approximately in the center of the row of cists, a rough stone structure was encountered near the bedrock, surrounded by several Archaic female terracotta figurines, a bronze mesomphalos phiale, and a number of small metal offerings. This area may have been the focus of cult prior to the construction of Room Δ. Indeed, it seems that in the late Classical period the area was leveled with a fill consisting of earth and finds from the interior of the adjacent temple and the surrounding area. The material, dating from the late Archaic until the late Classical period consisted mostly of plain cooking and storage vessels, though miniature vases, fragments of small and large female clay figurines, several bronze jewels, and other small artifacts, as well as animal bones and sea shells, were also found. It was perhaps at that time that the sculptures and inscribed bases, as well as a Panathenaic amphora, were collected and placed inside the porch, which was then blocked; as a consequence of this, it is likely that access to the main building was achieved only through the entrance of the northern wall. The sanctuary was abandoned in the early third century BCE, either because of the synoecism of Demetrias (founded 294 BCE) or owing to natural causes (possibly an earthquake of 265 BCE attested in the area).

Temples as *Hestiatoria*

The Sanctuary of Apollo at Soros is a good case study that illustrates not only the great variety in the architectural layout of Greek sanctuaries during the Archaic period and their survival in later periods, but also the diversity in the function of pre-Classical temples all over the Greek world. The plan and general characteristics of the temple of Apollo at Soros is very close to what one observes in the late eighth to early seventh century BCE, but here we are more than one century later. Temple-*hestiatoria* are mostly characteristic of the Early Iron Age (see Drerup, who already in 1969 considered early temples as halls of gatherings around the hearth), but the evidence from Soros proves that in the late Archaic period in Thessaly such hybrid temples could still be in fashion and were appropriate for how the temples were used.

Temple-*hestiatoria* were also *en vogue* in sanctuaries more “centrally” placed within the Greek world, such as in the Cyclades, both during the Geometric and early Archaic periods. The impressive marble Archaic “Oikos of the Naxians” on Delos and its Early Iron Age predecessor (the so-called Pre-Oikos) most probably served such a composite function as well (Courbin 1980; Mazarakis Ainian 1997: 180–181). Interestingly, the Delian edifice presents a drainage system between cella and pronaos at the west, which reminds us of the feature uncovered at Soros. Moreover, the roughly similar dimensions of the Oikos, and the presence of a secondary door at the north, are noteworthy (though at the Oikos of the Naxians there was a third entrance

at the east, facing the probable older Temple Γ).

Also similar in type are the Late Geometric and early Archaic Naxian temples at Iria on Naxos (phases II and III, respectively), which served also as hestiatoria, judging by the presence of spacious benches and a large eschara within each edifice. The dissociation between temple and hestiatorion here was achieved in the later Archaic period, when the marble Ionic Temple IV was constructed and separate structures were built next to the propylon to the temenos, around 570 BCE (Lambrinoudakis 1991). Interestingly, the Archaic temple of Demeter at Hysile on Andros can be regarded as an unusual temple-hestiatorion. It is a rather small anta temple, furnished in the interior with stone-built benches along the three sides, two built tables, and a base presumably for the cult statue set against the bench of the back wall (Televantou 1999; 2008).

These few examples show that besides the more conventional and widespread function of the temple in Geometric and Archaic Greece, as described in most textbooks, there are others doubtless more diversified than previously thought (for some useful recent handbooks see Hellmann 2006; Lippolis et al. 2007). In other words, the archaeological data are varied and point towards the existence of a large variety not only in the architectural forms of early Greek temples but also in their function. This variety has often been underestimated in studies dealing with the rise of sanctuaries and the nature of early temples. The scholarly investigations of more recent years in the study of the Greek periphery give us a better understanding of the numerous and highly interesting diversity in the actual practice of Greek religion.

FURTHER READING

On this topic, Morgan 1990, de Polignac 1995, and Mazarakis Ainian 1997 are fundamental. Reports and studies of specific buildings are listed in the references. For discussion of the placement of early temples, see the essays in Alcock and Osborne 1994, and de Polignac 1995.

REFERENCES

Alcock, S.E. and R. Osborne, eds. 1994. *Placing the Gods: Sanctuaries and Sacred Space in Classical Greece*. Oxford.

Antonaccio, C.M. 1995. *An Archaeology of Ancestors: Tomb Cult and Hero Cult in Early Iron Age Greece*. Lanham.

Bammer, A. 1990. "A Peripteros of the Geometric Period in the

Artemision of Ephesos.” *AS*, 40: 137–160.

Bammer, A. 1991. “Les Sanctuaires des VIII^e et VII^e siècles à l’Artémision d’Ephèse.” *RA*, 1: 63–83.

Bats, M. and B. D’Agostino, eds. 1998. *Euboica: L’Eubea e la presenza euboica in Calcidica e in Occidente*. Atti del Convegno Internazionale (Napoli 13–16 novembre 1996). Naples.

Buitron-Oliver, D., ed. 1991. *New Perspectives in Early Greek Art*. Studies in the History of Art 32. Washington, DC.

Costanza Lentini, M., ed. 2001. *The Two Naxos Cities: A Fine Link between the Aegean Sea and Sicily*. Palermo.

Courbin, P. 1980. *L’Oikos des Naxiens. Délos XXXIII*. Paris.

Crielaard, J.P., ed. 1995a. *Homeric Questions: Essays in Philology, Ancient History and Archaeology including the Papers of a Conference Organized by the Netherlands Institute at Athens (15 May 1993)*. Amsterdam.

Crielaard, J.P. 1995b. “Homer, History and Archaeology: Some Remarks on the Date of the Homeric World.” In Crielaard, ed., 201–288.

de Polignac, F. 1995. *Cults, Territory and the Origins of the Greek City-State*. Chicago.

Drerup, H. 1969. *Griechische Baukunst in geometrischer Zeit: Archaeologia Homerica II*. Göttingen.

Duploux, A. 2012. “Culti e cultura nella Grecia di età geometrica (1000–750 a.C.).” In *Alle origini della Magna Grecia: Mobilità, migrazioni, fondazioni*. Taranto, 1–4 ottobre 2010, Atti del 50^o Convegno di Studi sulla Magna Grecia. Taranto. 103–132.

Fagerström, K. 1988. *Greek Iron Age Architecture: Developments through Changing Times*. Studies in Mediterranean Archaeology 81. Göteborg.

Frielinghaus, H. and J. Stroszeck, eds. 2010. *Neuen Funden in griechischen Städten und Heiligtümern*. Kolloquium. 4.–5. Nov. 2005. Univ. Regensburg (Festschrift Bernard Wesenberg). Wiesbaden.

Gauss, W. and F. Ruppenstein. 1998. “Die Athener Akropolis in der frühen Eisenzeit.” *MDAI(A)*, 113: 1–60.

Geroulanou, M. and M. Stamatopoulou, eds. 2005. *Architecture and*

Archaeology in the Cyclades: Papers in Honour of J.J. Coulton. BAR International 1455. Oxford.

Gorogianni, E. 2011. "Goddess, Lost Ancestors, and Dolls: A Cultural Biography of the Ayia Irini Statues," *Hesperia* 80: 635–655.

Greco, E., ed. 2002. *Gli Achei e l' Identità etnica degli Achei d' Occidente*. Atti del Convegno Internazionale di Studi. Paestum & Athens.

Gruben, G. and V.K. Lambrinoudakis. 2002. "Naxos: Das Heiligtum von Gyroula bei Sangri." *AW*, 33: 391–401.

Hägg, R., N. Marinatos, and G. Nordquist, eds. 1988. *Early Greek Cult Practice*. Stockholm.

Hellmann, M.-Ch. 2006. *L'architecture grecque. 2. L'architecture religieuse*. Paris.

Intzesiloglou, B. 2002. "The Archaic Temple of Apollo at Ancient Metropolis (Thessaly)." In Stamatopoulou and Yeroulanou, eds, 109–113.

Karlson, L. and R. Brant, eds. 2001. *From Huts to Houses: Transformations of Ancient Societies*. International Seminar, Rome Sept. 22–25, 1997. Uppsala.

Kerschner, M., and M. Prochaska. 2011. "Die Tempel und Altäre der Artemis in Ephesos und ihre Baumaterialien: Naturwissenschaftliche Untersuchungen zur Herkunft der Marmore und ihr archäologischer Kontext." *JÖAI*, 80: 73–153.

Koiner, G., M. Lehner, T. Lorenz, and G. Schwarz, eds. 2006. *Akten des 10: Österreichischen Archäologentages in Graz*, 7.–9. November 2003. Wien.

Kolia, E. 2011. "A Sanctuary of the Geometric Period in Ancient Helike." *ABSA*, 106: 201–246.

Kolia, E. and A. Gadoulou. 2011. "Ναός Γεωμετρικών χρόνων στα Νικολαΐκα Αχαΐας: Πρώτη παρουσίαση της ανασκαφής." In Mazarakis Ainian, ed. 191–210.

Kourayos, Y. 2012. *Despotiko, the Sanctuary of Apollo*. Athens.

Kourou, N. 2011. "From the Dark Ages to the Rise of the Polis in the Cyclades: The Case of Tenos." In Mazarakis Ainian, ed. 399–414.

Kron, U. 1988. "Kultmahle im Heraion von Samos: Versuch einer

Rekonstruktion.” In Hägg, Marinatos, and Nordquist, eds., 135–147.

Lambrinoudakis, V.K. 1991. “The Sanctuary of Iria on Naxos and the Birth of Monumental Greek Architecture.” In Buitron-Oliver, ed. 173–188.

Lambrinoudakis, V.K. 2001. “The Emergence of the City-State of Naxos in the Aegean.” In Costanza Lentini, ed. 13–22.

Lambrinoudakis, V.K. 2005. “A New Early Archaic Building on Naxos: Some Thoughts on the Oikos of the Naxians on Delos.” In Geroulanou and Stamatopoulou, eds, 79–86.

Lemos, I.S. 2002. *The Protogeometric Aegean: The Archaeology of the Late Eleventh and Tenth Centuries BC*. Oxford.

Lippolis, E., M. Livadiotti and G. Rocco. 2007. *Architettura greca: Storia e monumenti del mondo della polis dalle origini al V secolo*. Milano.

Luce, J.M. 2010. “Homère, les sanctuaires et le temps.” *Gaia*, 13: 9–55.

Marinatos N. and R. Hägg, eds. 1993. *Greek Sanctuaries: New Approaches*. London.

Mazarakis Ainian, A. 1997. *From Rulers’ Dwellings to Temples: Architecture, Religion and Society in Early Iron Age Greece (1100–700 B.C.)*. Studies in Mediterranean Archaeology 122. Jonsered.

Mazarakis Ainian, A. 1999. “Νέα στοιχεία για την Ιερά Οικία της Ελευσίνας από το Αρχείο Ι. Τραυλού.” *Archaiologike Ephemeris*, 43–65.

Mazarakis Ainian, A. 2001. “From Huts to Houses in Early Iron Age Greece.” In Karlson and Brant, eds., 139–161.

Mazarakis Ainian, A. 2004. “From the Beginnings to the Archaic Age: Hero Cults of Homeric Society.” In *Thesaurus Cultus et Rituum Antiquorum* II.3.d. *Heroisierung und Apotheose*. 131–140.

Mazarakis Ainian, A. 2005. “Inside the Adyton of a Greek Temple: Excavations on Kythnos (Cyclades).” In Geroulanou and Stamatopoulou, eds., 87–103.

Mazarakis Ainian, A. 2009. “Ανασκαφικές έρευνες στο ιερό του Απόλλωνος στο Σωρό (2004–05).” In *2^ο Αρχαιολογικό Έργο Θεσσαλίας και Στερεάς Ελλάδας. Volos, 17–19 March 2006*. 269–294.

- Mazarakis Ainian, A. 2010. "Ein antikes Heiligtum auf Kythnos." In Frielinghaus and Stroszeck, eds., 21–53.
- Mazarakis Ainian, A., ed. 2011a. *The Dark Ages Revisited: Acts of an International Symposium in Memory of William D.E. Coulson, University of Thessaly, Volos, 14–17 June 2007*. Volos.
- Mazarakis Ainian, A. 2011b. "Homeric Temples." In *The Homer Encyclopedia*, ed. M. Finkelberg. Malden, 299–301.
- Mazarakis Ainian, A. 2011c. "Το ιερό του Απόλλωνα στο Σωρό." In Valavanis, ed. 143–170.
- Mazarakis Ainian, A. 2012. "Ανασκαφικές έρευνες στο ιερό του Απόλλωνος στο Σωρό (2006–08)." In 3^ο *Αρχαιολογικό Έργο Θεσσαλίας και Στερεάς Ελλάδας*. Volos, 12–15 March 2009. 287–298.
- Mazarakis Ainian, A, and A. Alexandridou. 2011. "The Sacred House of the Academy Revisited." In Mazarakis Ainian, ed. 122–145.
- Milojčić V. 1974. "Bericht über die Deutschen Archäologischen Ausgrabungen in Thessalien 1973." *Athens Annals of Archaeology*, 7: 43–75.
- Moormann, E.M. 2011. *Divine Interiors: Mural Paintings in Greek and Roman Sanctuaries*. Amsterdam.
- Morgan, C. 1990. *Athletes and Oracles: The Transformation of Olympia and Delphi in the Eighth Century BC*. Cambridge.
- Morgan, C. 1999. *The Late Bronze Age Settlement and Early Iron Age Sanctuary, Isthmia VIII*. Princeton.
- Morgan, C. 2003. *Early Greek States beyond the Polis*. London.
- Moschonisioti, S. 1998. "Excavations at Ancient Mende." In Bats and D'Agostino, eds., 255–271.
- Niemeier, W.D. 2009. "Kalapodi: The Sanctuary of Apollo at Abai." In Vlachopoulos, ed. 302–305.
- Niemeier, W.D. 2011. "Rapport d'activités de l'institut allemand en 2011." *Chroniques de Fouilles en Ligne* (online).
- Niemeier, W.-D. 2012. "The Olpe Chigi and New Evidence for Early Archaic Greek Wall-Painting from the Oracle Sanctuary at Abai (Kalapodi)." In E. Mugione (ed.), *L'Olpe Chigi, storia di un agalma, Atti del Convegno di Fisciano, Università di Salerno, 3–4 giugno 2010*. Salerno: 79–86.

- Niemeier, W.-D. 2013. "Kultkontinuität von der Bronzezeit bis zur römischen Kaiserzeit im Orakelheiligtum des Apollon von Abai (Kalapodi)." In I. Gerlach - D. Raue (eds), *Sanktuar und Heiligtum: heilige Plätze imarchäologischen Befund. Menschen - Kulturen - Traditionen*, DeutschesArchäologisches Institut, Forschungscluster 4, vol. 10. Rahden: 33–42.
- Papadopoulos, J. 2003. *Ceramicus Redivivus: The Early Iron Age Potters Field in the Classical Athenian Agora. Hesperia*, Suppl. 3. Princeton.
- Papapostolou, I.A. 2012. *Early Thermos*. Athens.
- Petropoulos, M. 2002. "The Geometric Temple at Ano Mazaraki (Rakita) in Achaia." In Greco, ed. 143–164.
- Popham, M.R., P.G. Calligas, and L.H. Sackett, eds. 1993. *The Protogeometric Building at Toumba. Part 2: The Excavation, Architecture and Finds*. London.
- Powell, B.B. 1991. *Homer and the Origin of the Greek Alphabet*. Cambridge.
- Rambach, J. 2002. "Dörpfelds Bau VII in der Altis von Olympia: Ein früheisenzeitliches Apsidenhaus und 'Haus des Oinomaos'?" *AA*, 1: 119–134.
- Shaw, J.W. and M.C. Shaw, eds. 2000. *Kommos IV, The Greek Sanctuary*. Princeton.
- Snodgrass, A.M. 1977. *Archaeology and the Rise of the Greek State*. Cambridge.
- Sourvinou-Inwood, C. 1993. "Early Sanctuaries, the Eighth Century and Ritual Space." In Marinatos and Hägg, eds., 1–17.
- Stamatopoulou, M. and M. Yeroulanou, eds. 2002. *Excavating Classical Culture Recent Archaeological Discoveries in Greece*. Studies in Classical Archaeology 1. Oxford.
- Stampolides, N., ed. 1999. *Φως Κυκλαδικόν: Μνήμη Νικολάου Ζαφειρόπουλου*. Athens.
- Televantou, Ch. 1999. "Άνδρος. Το ιερό της Ύψηλῆς." In Stampolides ed. 132–139.
- Televantou, Ch. 2008. *Άνδρος: Η αρχαία πόλη της Ύψηλῆς*. Athens.
- Valavanis, P., ed. 2011. *Ταξιδεύοντας στην κλασική Ελλάδα: Τιμητικός*

τόμος για τον Πέτρο Θέμελη. Athens.

Verdan, S. 2013. *Le Sanctuaire d'Apollon Daphnéphoros à l'époque géométrique*. Eretria XXI. Gollion.

Vlachopoulos, A., ed. 2009. *Archaeology: Euboea and Central Greece*. Athens.

Weißl, M. 2006. "Altäre im Artemision von Ephesos." In Koiner, Lehner, Lorenz and Schwarz, eds., 191–198.

Wekowski, M. 2014. *The Rise of the Greek Aristocratic Banquet*. Oxford.

Wright, J.C. 1982. "The Old Temple Terrace at the Argive Heraeum and the Early Cult of Hera in the Argolid." *JHS*, 102: 186–201.

Wright, J.C., 1994. "The Spatial Configuration of Belief: The Archaeology of Mycenaean Religion." In Alcock and Osborne, eds., 37–78.

CHAPTER 3

Monumentality and Foreign Influence in Early Greek Temples

†*Barbara A. Barletta*

The term “monumental” is generally understood to mean of large size, and to thus convey a sense of impressiveness to the beholder. In architecture it also conveys permanence, referring to construction in nonperishable materials. Many early Greek buildings had walls of wattle-and-daub or mudbrick, which may have been reinforced or supported by wood and slightly elevated on a stone socle. The combination of stone and mudbrick continued for houses throughout the Greek period. Certain regions, such as Crete and other islands of the Aegean and East Greece, have a long tradition of building walls fully in stone. Elsewhere, the conversion to stone was limited initially to religious buildings. In addition to stone walls, temples may have terracotta (fired clay) tiles for the roof. These materials not only ensured durability but also lent prominence to important, communal constructions.

Temples could be further distinguished by a peristyle or colonnade surrounding the cella building, or sekos. In addition, the Greeks developed a system of architectural forms, referred to as “orders,” which were initially limited to religious structures. Almost all of these innovations emerged during the seventh century BCE, although in different locations and on different monuments. We will trace their introduction and development in Greek temples from the earliest evidence in Geometric times (eighth century) through the Orientalizing (circa 700–600 BCE) and Archaic (circa 600–480 BCE) periods.

Monumental Scale

As early as the first half of the tenth century BCE, Greek interest in large scale was exemplified in the 50-m long Heroön at Lefkandi (Coulton 1993), but this building is unusual for its time. Huge vases placed over certain graves in Athenian cemeteries, such as the Dipylon Vase and Dipylon Krater during the eighth century, demonstrate similar interests (Coulton 1977: 30).

Nevertheless, perhaps because of limitations in technology or resources, large scale is generally not expressed in architecture until the seventh century.

Architects had three ways to increase size (Coulton 1977: 74–79). The easiest

method was to extend the length of a building, which was accomplished by adding to the number of roof supports. Thus, several early temples are long and narrow, often reaching a length of 100 Greek feet, which was considered a sacred number. In the *Hekatompedon* (“Hundred-Footer”) in the sanctuary of Hera at Samos, an island off the coast of Asia Minor, the sekos (inner building) measured about 33.0 m in length but remained narrow in width, approximately 6.5 m or slightly more, resulting in a proportion of 1 : 5. Even including the proposed peristyle, the ratio was only about 1 : 3.22 (see Gruben 2001: 350–353 for phases of construction).

Mainland Greece has produced a number of large-scale, elongated buildings from early times. That in the sanctuary of Apollo at Halieis (Argolid), dated around 700 BCE, was 27.30 m long but only 4.46 m wide, for a ratio of 1 : 6 (Jameson 1974; 1982: 365–366; Mazarakis Ainian 1997: 162–164). It served as a temple of the deity as well as a location for dining and storing valuable items. In later times, one of the roles of the Greek temple was also to serve as a treasury. An early seventh-century temple at the Achaean site of Ano Mazaraki (Rakita) measures on its exterior 34.40×11.00 m, thus qualifying for the designation *hekatompēdon* (Petropoulos 2002: 150–155). Its sekos alone is 27.90×7.50 m (1:3.72). At Eretria, a *hekatompēdon* of 670–650 BCE has been traced within the remains of the sixth-century Temple of Apollo (Auberson 1968: 11–15). Its sekos measures 34×7 m, or nearly 100×20 Ionic feet (of 0.349 m), for a ratio of 1 : 5. The temple is reconstructed with a peristyle, which increases its dimensions to 40.10×11.70 m, yielding a ratio of 1 : 3.43. The Temple of Poseidon at Isthmia (Figure 3.1), dated at circa 675–650 BCE, is also classified as a *hekatompēdon*, with its sekos approximately 32 m long. It is relatively wider than the others, about 7.4 m, giving a ratio of 1 : 4 (Broneer 1971: 54; Gebhard 2001: 60). A peristyle has been recognized here, too, for which the ratio is 1 : 2.86.

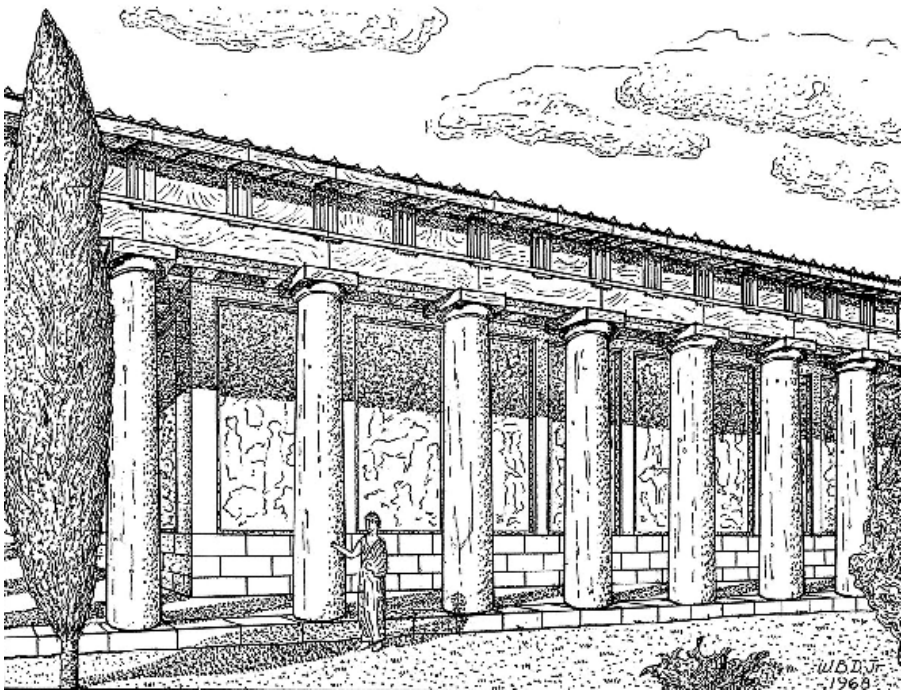


Figure 3.1 Archaic Temple of Poseidon at Isthmia, restoration shown at southwest corner. Broneer 1971: 41, fig. 54.

Source: Courtesy the Trustees of the American School of Classical Studies at Athens.

The elongated form of temple continues through most of the Archaic period. Doric temples were typically constructed with a peristyle comprising six columns on the façade and a varying number of flank columns. By the early Classical period (circa 480–450 BCE), architects settled on a formula for the latter of $2x + 1$ (x = the number of façade columns). Archaic temples, however, often employed a high number on the flanks. A particularly striking example from mainland Greece is the Older Parthenon, begun circa 488 BCE, which is reconstructed with 6×16 supports (Hill 1912). In this case the cella building consisted of the usual front and back porches framing a naos but also included an extra room at the rear. Elongation was especially characteristic of temples in western Greece (southern Italy and Sicily). In perhaps the earliest Doric temple built in this area, that of Apollo at Syracuse (circa 570–560 BCE), the peristyle consisted of 6×17 columns (Mertens 2006: 104–110). Already this building shows another trait common in the west, a compartment at the front created by a second line of columns extending across the east end.

Architects could also achieve increased size by adding columns to the front and rear, thus expanding the width of the temple. This was not often done, perhaps because it required other adjustments as well. These problems are demonstrated by the Temple of Hera I at Paestum (formerly called “the

Basilica”), begun around 550 BCE (Mertens 2006: 139–148). It was designed with nine columns on the façade and a similarly large number (18) on the flanks. Because the architect did not increase the height of the columns to compensate for the wide façade, the entirety appears truncated. By contrast, in the Classical Parthenon, with eight end columns, each shaft bore one more drum than in its six-columned predecessor (Barletta 2005: 71).

An especially wide façade not only expressed monumentality but also allowed for innovations in plan. The Doric Temple of Artemis at Corcyra (Corfu), off the western coast of Greece, devoted the extra space created by its eight-column façade to its porticoes (Schleif 1940: 15–61). This early building, constructed circa 580–570 BCE, initiates the tradition of spacious porticoes in western Greek architecture. Beginning around the same time, the East Greek cities of Samos, Ephesos, and Didyma filled the area behind the wide façades of their Ionic temples with columns (Gruben 2001: 355–365, 385–390, 398–405, respectively). The result was a series of dipteral temples (or dipteroi), with two lines of columns (a double peristyle) entirely encircling the cella building.

The third way to expand the size of a temple was to increase its height. Although the dipteral temples of the east are fragmentary, their heights must have been considerable, owing to the especially tall columns of the Ionic order (Coulton 1977: 79). Another temple with an eight-column façade, Temple G at Selinous (Sicily), was gigantic not only in plan (approximately 50 × 110 m) but also in elevation, with columns about 3.00 m in diameter and 14.70 m in height (Gruben 2001: 310–314; Mertens 2006: 231–235.). It was so enormous that its construction, begun circa 520 BCE, went on for many years but was never completed. Even this was not the largest temple in Sicily. That of Olympian Zeus at neighboring Akragas, started not much later (Mertens 2006: 261–266), measured over 2 m wider on the stylobate. Since it had fewer columns, these were larger in diameter, about 4 m, and height, perhaps over 20 m (Gruben 2001: 330; Mertens 2006: 263). Such enormous dimensions were beyond the limits allowed by their material. The columns and entablatures could not be made freestanding but instead were engaged in a wall that surrounded the cella building.

Peristyle

As already suggested, the size and proportions of a temple were strongly influenced by the presence (or not) of a peristyle, or surrounding colonnade. The peristyle is considered a characteristic feature of the Greek temple. That view is not entirely accurate, however, since smaller structures may lack this feature.

In the Cycladic Islands, the temple frequently comprised only a sekos. That structure may have a closed front or, more often, a series of columns placed between the antae (in antis) or in front of them (prostyle). In some Cycladic temples, these columns reach a high number. Thus, the Temple of Demeter and Kore at Sangri on Naxos (circa 525 BCE) had five columns between antae (Figure 3.2), and the Temple of Apollo at Karthaia on Kea (late sixth century BCE), had six (Lambrinoudakis 1991: 185). These buildings vied with peripteral temples in the number of columns in their façades, although usually limited to the front. A frontal, rather than all-sided, emphasis is expressed also in other aspects of temple architecture in this region.



Figure 3.2 Temple of Demeter and Kore at Sangri, Naxos.

Source: B. Barletta.

Elsewhere in the Greek world, a temple may consist simply of a sekos or of both a sekos and a peristyle. The latter arrangement was thought to appear as early as the eighth century BCE, but the identification of several early peripteral temples is now being questioned (Mallwitz 1981; see also Hellmann 2006: 43–49). A. Mallwitz (1981) has argued that the so-called Hekatompedon I at Samos, presumably begun in the eighth century and provided with a peristyle in the middle of that century (phase IA), did not exist at all. According to his reconstruction, the only Hekatompedon, now assigned to the first half of the seventh century, was initially built without a peristyle but received one in a mid-seventh-century renovation. H.J. Kienast (1996) has gone further, eliminating even this peristyle. Thus, the earliest

peripteral temple of Hera would have been the great dipteral building by Rhoikos, circa 575 BCE. So, too, the first temple of Artemis at Ephesos, dated by Bammer (1990; 2001) to the second half of the eighth century, is now placed in the second quarter of the seventh century (Kerschner and Prochaska 2011: 77–82). It is a relatively small building, measuring only 13.5×6.5 m, with a peristyle of 4×8 wooden columns resting on stone bases and a second series of columns in the interior. Theories differ on the roofing of the building and the function of the interior columns.

Mallwitz (1981) has also questioned the existence of a peristyle in some seventh-century temples, including the hekatompedon at Eretria. The sekos is surrounded by foundations that were originally assigned to the stylobate for wooden columns but which Mallwitz identifies as the paving of a terrace. The narrowness of the foundations, only 0.60 m, supports this explanation. Mallwitz suggests the same arrangement in the Temple of Poseidon at Isthmia. Its excavators discovered foundation trenches around the temple, as well as some blocks, both of which were believed to represent the remains of a stylobate supporting wooden peristyle columns. Recent excavations (Gebhard and Hemans 1992: 25–40) have found evidence for wall piers, whose location corresponds with that of the exterior columns, thus offering additional support for the existence of a peristyle. Until the temple is fully published, we must withhold judgment, but one obstacle to the proposed reconstruction should be mentioned. The distance between wall piers, and thus also peristyle columns, is about 2.26 m. By contrast, the geison (cornice) blocks that the columns carried are only 0.80 m long. O. Broneer (director of earlier excavations) had resolved this with a reconstruction that placed the blocks intermittently, but a more logical solution would locate them at the top of the wall, above blocks of similar dimensions. If so, the temple cannot have been peripteral.

In the Temple of Athena Pronaia at Delphi, the peristyle is assured, but its assignment to the seventh century (Demangel 1923) is disputed. On the basis of a new reconstruction of the capitals and revised proportions of the column shafts, Schwandner (1976: 117–119) dates it instead in the second quarter of the sixth century. This accords better with the development of the stone Doric capital.

There now remain no uncontested examples of eighth-century peripteral temples and only a few from the seventh century BCE. These last are sporadic in time, varied in form, and widely separated in location. The earliest confirmed peripteral temple is in mainland Greece and dates to the beginning of the seventh century BCE. The site, Ano Mazaraki (Rakita), is in the relatively remote region of Achaea, and the building, apparently a temple of Artemis, is unusual in being apsidal at both ends (Mazarakis Ainian 1997: 72–73; Petropoulos 2002). Its prostyle porch is formed by five rectangular posts, which are continued in a second, smaller series of columns enclosing the cella

walls. The peristyle thus does not fully surround the building, and the portico it creates is fairly narrow, ranging in depth from 1.10 to 1.50 m. Additionally, the placement of its supports on separate bases rather than on a continuous stylobate is unusual in mainland Greek temples (Martin 1965: 310–312). Nevertheless, this must have been an impressive building for both its size and configuration.

The Old Temple of Hera in the Argive Heraion (Tilton 1902: 110–111) also had a peristyle, as attested by the remains of a portion of the (continuous) stylobate showing circular depressions for the placement of three of its columns. Because of their relatively small diameters, approximately 0.80 m, the columns were initially thought to be of wood, although some have argued for socles, or even entire columns, of stone. Their wide placement demonstrates that the entablature they carried was of wood. This temple is far more canonical than that at Ano Mazaraki, but its date is uncertain. Proposals range from the early seventh to the middle of the sixth century BCE (see Barletta 2001: 34–35; Pfaff 2003: 1; Østby 2006: 30–34). Recently, both the temple and the terrace on which it stood have been assigned to the third quarter of the seventh century BCE (Antonaccio 1992).

Current evidence thus suggests that far from being a common feature of early Greek temples, the peristyle is rather unusual, even during the seventh century. By the sixth century, however, it becomes characteristic of large-scale temples. It is present from the beginning in the Temple of Hera at Olympia, circa 590 BCE (Mallwitz 1972: 137–143), the Temple of Artemis on Corcyra, circa 580–570 BCE, and the North and South temples at Kalapodi, circa 570–560 BCE (Felsch 1987: 19–24), among others. Significantly, the sixth century was also a time of increasing “petrification” of Greek temples, with a shift to stone as the primary material.

Stone Construction

Already during the seventh century BCE, Greek architects had begun to explore the use of cut-stone blocks for their temples. They were familiar with rubble construction, either for the socle or for the entire wall. Yet cut stone provided a more regular appearance and increased stability. It is not surprising to find that some of the early temples of large scale were also built of rectangular stone blocks. The Hekatompedon at Samos presents an example. As already noted, early scholars recognized two buildings, labeled Hekatompedon I and II (Kyrieleis 1981: 78–81). These were similar in form and dimensions, with one built above the other. The earlier was identified by a socle of coursed, but roughly dressed stones, with the remainder of the wall in mudbrick, while the later showed a more finely finished wall of regular stone blocks, which probably continued entirely in stone (Kyrieleis 1981: 79;

contra, Kienast 2001: 36). These are now assigned to different levels of the same building. In both, the wall was constructed of two “skins,” consisting of an inner and outer face, with rectangular forms and tight joints only on the faces. The refined technique and extensive use of stone in the elevation demonstrates a desire for monumentality. Still another indication of such effort is the figured frieze, which shows a line of warriors incised on the wall blocks.

The two-skin construction technique continued into later times in certain areas of the Greek world. In the sixth century, it becomes especially typical of architecture both in Asia Minor and the Aegean Islands, and it continues in use in the Cyclades at least until the fourth century (Held 2000: 64–65). Builders on the island of Chios used it for the walls of the Temple of Athena at Emporio, dated around the middle of the sixth century (Boardman 1967: 10–17; Held 1998), with a sophisticated variation. As shown by blocks found both *in situ* and fallen in their original arrangement, they were taller at the bottom of the wall and diminished in height by a few centimeters in each successive course. A similar arrangement seems to have been used in the Temple of Athena at Karthaia on Kea (Østby 1980: 200), circa 500 BCE, although the wall is more poorly preserved.

This type of construction often lacks binders, including clamps and dowels. Typically, the inner skin of the wall is of poorer quality stone or workmanship and of smaller blocks, but these differences are masked by plaster and paint (Gruben 1982: 212, 224–226). The execution of such walls generally becomes more refined over time: in the Temple of Artemis on Paros (circa 490–480 BCE), for example, both faces in the pronaos are of high-quality workmanship in Parian marble and more rigorously bound together (Schuller 1991: 16–19).

Mainland Greece also adopts stone walls during the seventh century for some of its temples. Two sites, Corinth and its sanctuary at nearby Isthmia, are well known for the early use of cut-stone blocks. The temple at Corinth, datable to around 680 BCE, is preserved only in fragmentary blocks and roof-tiles that were discarded after a fire (Roebuck 1955: 149–150, 153–157; Robinson 1976a: 224–235; Robinson 1976b: 244–250; Winter 1993: 12–16). Because no evidence exists for columns or capitals, the temple may have been limited to a sekos, with no peristyle or even porch columns. Yet its walls are assumed to have risen fully in stone, reinforced by wooden beams (Robinson 1976a: 227). As at Samos, the walls were apparently decorated, here with patterns in paint on the interior and in incision on the exterior.

More is known of the slightly later temple at Isthmia. Excavators have been able to uncover its plan and enough blocks of its walls to allow for at least a partial reconstruction. Although the walls were apparently fully in stone, the excavators suggest that they were buttressed by piers. If, as likely, the piers were of wood (Rhodes 1987a: 478), they would recall construction techniques in perishable materials, such as mudbrick, where wooden posts were often

used as reinforcements.

Indeed, the masonry technique of the temples at Corinth and Isthmia has been labeled as “transitional” between the increasing insertion of cut-stone blocks into rubble and mudbrick walls in the region and true ashlar construction (Rhodes 1987a: 478). That is since earth and clay were inserted between courses and the locations of the vertical joints varied from course to course because of the differing lengths of individual blocks. On the other hand, the heights and widths of the blocks in the Isthmia temple were uniform and their widths coordinated with their location in the building (Gebhard 2001: 46–47). A single line of blocks extended through the entire wall, with tight joints created on both faces. While not yet showing true ashlar construction, these temples certainly set the background for its use in the sixth century BCE.

The Corinthian buildings represent anomalies for their time. Several other large-scale, and thus presumably important, seventh-century temples in mainland Greece were constructed with mudbrick walls. This is the case for the elongated Temple of Apollo at Halieis (Jameson 1982: 364; but see Jameson 1974: 116 for fully stone construction) and probably also the somewhat later hekatompedon for the same deity at Eretria. The temple at Ano Mazaraki also had mudbrick walls, placed on a two-skin socle that included a rudimentary form of orthostate or upright block (Petropoulos 2002: 150). Remains of the Old Temple in the Argive Heraion show that its walls were of mudbrick, probably reinforced by wood (Strøm 1988: 180–181, 186). Thus, the transition to stone did not occur at the same time, even within a limited geographical region.

By the turn of the seventh to sixth centuries, stone becomes more common for the walls of mainland Greek temples. Two examples, both of which lack surrounding peristyles, may be cited in this regard. One is the temple at Mycenae (circa 600 BCE), which had fully stone walls decorated with relief sculpture and crowned by a stone geison (Klein 1997: 282–292 for the architecture, assigned to the last quarter of the seventh century; Ridgway 1993: 333–335, 357–358, n. 8.5 for sculpture, dated circa 600 BCE). The other, the Temple of Apollo I on Aegina, datable in the first quarter of the sixth century, already displays a Doric façade (Hoffelner 1999: 15–43, who dates the temple to circa 600 BCE).

Even in the Panhellenic sanctuary of Olympia, however, the Temple of Hera was built around 590 BCE with stone only in its platform and the lower walls of the sekos. The well-finished wall socle, 1.03 m high, consisted of orthostates on the outer face and three courses of ashlar masonry inside, for a total thickness of 1.18 m. At the top, this socle was smooth, to support mudbricks. Since the latter needed protection from the elements, the antae, or wall ends, were sheathed in wood, which made them larger than the walls themselves. The enlarged anta becomes typical of Doric architecture in later times. Wood encased the cella door as well, a treatment that continues in

Doric buildings even with fully stone walls.

The peristyle and entablature were presumably likewise of wood. Extant remains of stone shafts and capitals take different shapes and therefore are assigned to different periods. Pausanias (5.16.1) tells us that even in his time, a single oak column stood in the opisthodomos (rear room). Scholars generally assume that the columns were originally in wood and were replaced over time by those in stone. Recently, however, U. Sinn has noted that several of the stone columns seem to belong to the original construction period of the temple and he suggests that later examples may represent repairs, after earthquake damage (2001: 63–64). The wooden column seen by Pausanias would then not have been a holdover from the past but itself a repair. Indeed, the large diameters of these columns, varying from 1.00 to 1.28 (Coulton 1977: 44), seem more suitable for stone than wood. The lack of any remains of the entablature imply that it was originally of wood and remained in that material throughout the life of the temple.

The Temple of Hera thus stands at a pivotal point in the development of stone architecture. Its method of joining blocks only at the edges still represents an early form of anathyrosis (Martin 1965: 195–196; Coulton 1977: 46–47), but the size and technique of wall construction show increasing sophistication. Its use of perishable materials may be due not to a lack of currency on the part of the architect but to economy (Coulton 1977: 43–44) as well as the generally slow move to petrification in mainland Greece. Indeed, the two temples already noted at Kalapodi were constructed circa 570–560 BCE with peristyles formed in one case (North Temple) of at least some wooden columns and in the other (South Temple) of a mixture of stone and wood.

Beginning with the Temple of Artemis on Corcyra, 580–570 BCE, stone is used for the entire Doric peripteros. Only slightly later, circa 570–560 BCE, the fully stone Temple of Apollo at Syracuse is constructed in western Greece. Stone continued to characterize large-scale Doric temples from the mid-sixth century BCE onward.

Tile Roofs

Many of these same temples display another characteristic of monumental Greek architecture, the tile roof (see also [Chapter 4](#)). Perhaps the earliest specimen in East Greece belongs to a seventh-century remodeling of the first peripteral Temple of Artemis at Ephesus (Bammer 2001: 73–74). The seventh-century hekatompedon at Samos, despite its large size and stone wall-construction, is traditionally reconstructed with a thatched roof (Coulton 1977: 32), but Gruben (2001: 352) raises the possibility that it, too, bore tiles. In mainland Greece, tile roofs make their introduction in the first half of the

seventh century on the two Corinthian temples previously discussed, at Corinth itself and in its sanctuary at Isthmia. These buildings are likewise innovative in their fully stone walls and, for the Isthmia temple, perhaps also a peristyle.

The system initially used in mainland roofs has been labeled Protocorinthian because of the discovery of tiles at Corinth in conjunction with Protocorinthian pottery (Le Roy 1967: 26; Winter 1993: 12–18). It consists of a combination of a slightly concave pan-tile and adjacent convex cover-tile in a single piece. The cover may appear on either side of the pan, suggesting that the tiles were laid from different sides, with separate cover-tiles used at the juncture. Special tiles were designed for the eaves, ridge, and the intersection of adjacent slopes (hip). The well-preserved roof of the Temple of Poseidon at Isthmia shows as many as eight different types of tiles, each requiring a different mold (Gebhard 2001: 57). These earliest roofs were thus surprisingly complex. The Proto-Corinthian system differed from the two major subsequent systems, Corinthian and Laconian, but is considered the ancestor of both.

One might be tempted to associate the petrification of the temple walls with the adoption of heavy roofing tiles, which in the Isthmia roof weighed about 53,000 kg (Gebhard 2001: 59). Yet this characteristic of monumentality does not necessarily require stone support. The Old Temple in the Argive Heraion seems to have had a terracotta roof (Pfaff 1990; Winter 1993: 160–162), despite its mudbrick walls and partly, if not fully, wooden peristyle. The Temple of Hera at Olympia, constructed with mudbrick upper walls, likely wooden columns, and certainly wooden entablature, also bore a heavy tile roof (see Winter 1993: 134–137).

Architectural Orders

The Greeks developed two major architectural orders, labeled Doric and Ionic by the Roman architect Vitruvius. In his late first-century BCE treatise, *De architectura*, he recounts the invention of these two systems from wooden origins. Because Vitruvius' work is the only architectural treatise preserved from antiquity, it took on great importance during the Renaissance and is still considered authoritative.

Vitruvius (4.1.3–8) ascribed the development of the orders to the people living in two distinct regions of the Greek world: Doric in mainland Greece and Ionic in the settlements along the coast of Asia Minor. These names reflect ancient views about the leaders of the major Greek tribes. He does not mention the third early architectural style, now labeled Aeolic for the region

of northern Asia Minor in which it developed, probably because it was so short-lived. He also neglects the Cycladic Islands, which played a significant role in the creation of the Ionic capital and base and developed their own version of the entablature. (See Barletta 2001 and Wilson Jones 2014 for origins of the orders.) Nevertheless, Vitruvius is generally correct in locating the inventions of the two orders in these separate geographical areas, where each continued to be used almost exclusively until the end of the Archaic period.

Vitruvius implies an early date for the emergence of the orders through his reconstruction of both historical context (4.1.3–8) and wooden material (4.2.1–5). As discussed earlier, Greek architects initially employed considerable amounts of wood in their constructions. Vitruvius explains the Doric triglyph–metope frieze, which appears in stone buildings as an alternation of grooved and flat or sculpted panels, as originating in boards or plaques attached to the ends of beams with fillers for the spaces between. The crowning cornice and its pendant mutules were subsequently derived from the principal rafters. The Ionic cornice possessed narrow dentils, which are explained as imitations of the common rafters. Modern scholars have accounted for additional features in the same way, suggesting that the three bands of the Ionic architrave reflect a series of wooden beams (Von Gerkan 1946/47: 25; Kähler 1949: 25). It is also proposed that the slender shafts of certain Doric columns (Martin 1965: 112–113) and in particular the two-part arrangement of the Ionic capital (Gruben 1996: 64–65) derive from wooden antecedents.

The archaeological evidence, however, presents a somewhat different picture from that of Vitruvius. Rather than developing in the distant past and in wood, the orders seem to be introduced relatively late and largely in stone. We have noted the existence of stone column bases in the Temple of Artemis at Ephesos, of the second quarter of the seventh century BCE, but they are irregular in shape and size, and do not yet show Ionic characteristics. Those traits begin to appear elsewhere in the early seventh century, in the cylindrical base associated with an interior support of the hekatompedon on Samos (Kienast 1996: 20–23) and in the slab with rounded edges below columns of the third Temple of Dionysos at Yria on Naxos (Gruben 1993: 102). These two components, a cylindrical spira and crowning torus, are combined for perhaps the first time around 580–570 BCE in the exterior porch columns of the fourth Temple of Dionysos at Yria. The spira and torus, with variations in shape, will continue to characterize the Ionic base.

Some elements, such as both Doric and Ionic capitals, first appear in the archaeological record fully formed, but not until the end of the seventh century (Barletta 2001: *passim*). Even so, in capitals of the first (Rhoikos) Ionic dipteral temple on Samos, only the echinus seems to have been of stone, with the crowning element of wood (Kienast 2002: 321). Here the shape and

articulation of the echinus may not yet be canonical. In fact, over time, the profiles of both Doric and Ionic echini change. This continual evolution of forms speaks against an early formation in wood.

While the Ionic dentil also makes its introduction fully developed, early specimens are few in number and disputed in date (Barletta 2001: 119). None seems to predate the sixth century. Yet this form has been recognized in a series of building models from the Hera sanctuary on Samos, of which the earliest may date to the late seventh century (Schattner 1990: 167–173). Some models show projections only on the front, while on others they are extended to additional sides, which suggests that the characteristic four-sided dentil course was still undergoing development at the turn from the seventh to the sixth century (Barletta 2001: 45–46).

The Doric frieze also evolved slowly, to judge from its incipient forms. Terracotta panels assigned to the Temple of Apollo at Thermon (circa 630 BCE) and stone reliefs from the temple at Mycenae (circa 600 BCE) are both occasionally identified as metopes, but they lack characteristic features (Barletta 2001: 66–69; see also Marconi 2007: 5–6, 8–9). More likely, they were affixed to the temple wall, thus representing a transition between earlier wall decoration and metopal plaques. Firm evidence for the frieze does seem to appear by the early sixth, if not even the late seventh, century, as attested by a single triglyph from Corcyra (Strøm 1988: 187–189), two series from the Temple of Apollo I on Aegina, and the remains of both triglyphs and metopes from the Old Tholos at Delphi, circa 580 BCE (Seiler 1986: 45–46; here [Figure 3.3](#)), and the Temple (and Altar) of Artemis on Korkyra (Schleif 1940: 34–35, 63–66). In some of these buildings, however, and in the slightly later Temple of Apollo at Syracuse, the triglyphs are not yet coordinated with the columns and intervening spaces.



Figure 3.3 Old Tholos at Delphi, reconstruction.

Source: Pomtow 1911: 197, fig. 25.

The typical Doric mutular geison (cornice) likewise shows a relatively late development. A stone geison appears as early as the construction of the Temple of Poseidon at Isthmia, but its underside does not have mutules. Mutules are also lacking on the geison of the Mycenae temple. They are not found until the early sixth century BCE, and in conjunction with a frieze, in the Temple of Apollo I on Aegina, the Old Tholos at Delphi, and the Temple of Artemis on Corcyra. Significantly, in the Apollo temple, both the triglyph-metope frieze and the mutular geison are limited to the front, while a smooth frieze and geison appear elsewhere.

Another late feature is the three-fascia architrave of Ionic temples. It is first attested in the Temple of Apollo at Didyma, begun around 540 BCE, but only on two sides. The other two show a smooth architrave, which seems to be earlier, based on the style of the gorgon placed at the corner of each series (Gruben 1963: 142–147, 175–176). Thus, while certain characteristics of the

architectural orders may have been inspired by familiar wooden forms, they do not represent direct translations into stone. Rather, the orders as we know them appear to have been a gradual and relatively late development.

Moldings

Moldings are associated with stone post-and-lintel architecture (Shoe 1936: 5), and thus they are introduced into Greek temples with the adoption of stone. They serve as transitional elements between courses, and those on the exterior of buildings cast shadows that help define characteristic profiles of the temples against the sky. Among the earliest is the flat face and concave soffit of a wall crown in the seventh-century Temple of Apollo at Corinth (Robinson 1976a: 228–230). Different types of moldings are generally linked with each order ([Figure 3.4](#)). Rectilinear profiles, as the fascia and fillet, are common in Doric buildings while convex ones, such as the half-round, the smaller-scale astragal, and the tapered ovolo, are characteristic of Ionic. The concave cavetto, one of the earliest forms to appear, is used by both (Shoe 1936: 5).

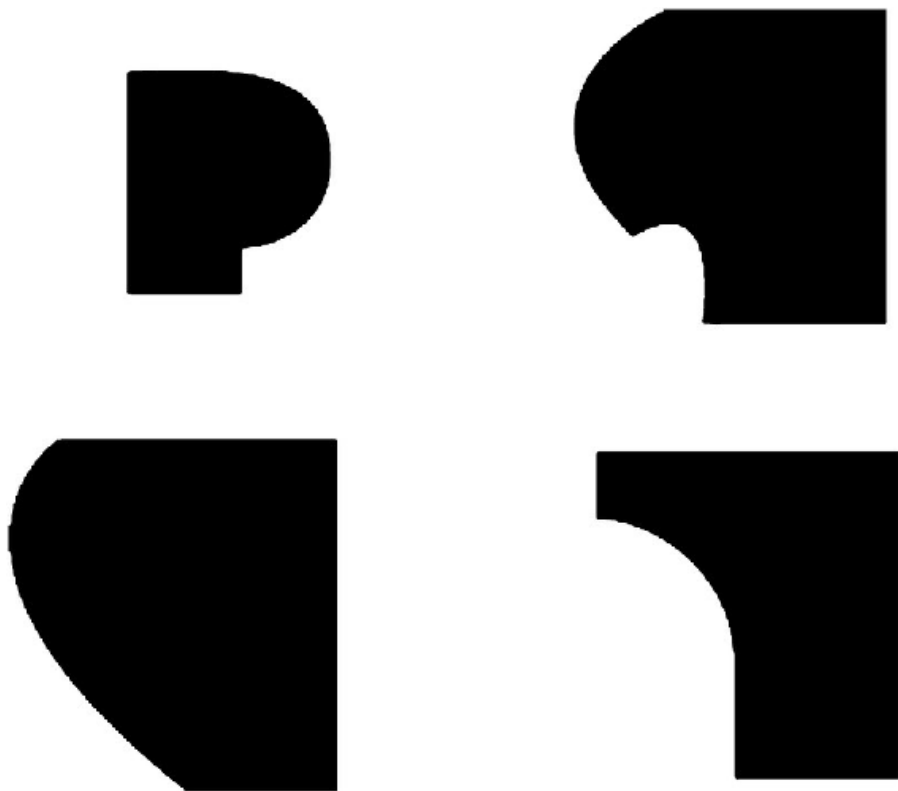


Figure 3.4 Silhouettes of moldings, clockwise from top left: half-round above a fillet, hawksbeak, cavetto with crowning fascia, ovolo.

Source: B. Barletta.

The cavetto is found already around 630–620 BCE on the terracotta sima of the Temple of Apollo at Thermon (Winter 1993: 112–114). It forms the sides of the sofa-type capital crowning the Doric anta or wall-end in the Temple of Apollo I on Aegina, of the first quarter of the sixth century, and another at Tiryns dated equally early (Schwandner 1988: 276–283). The cavetto also appears as the crowning of stelai and votive supports as early as circa 610 BCE (Richter 1961: 2, 9–14).

From the cavetto, Greek architects created a related profile, the hawksbeak, which is concave in its lower portion but with the top cut back to form a beak-like projection. It appears on the neck of certain early Doric column capitals, including on the single extant example from the Temple of Artemis at Corcyra. Also here, and in the slightly later (circa 570 BCE) Old Temple of Aphaia on Aigina (Schwandner 1985: 22–25), the hawksbeak crowns another type of anta capital, which will become canonical in Doric architecture. The molding is applied as well to cornices and simas in Doric buildings. Because of its suitability for shedding water, it was occasionally employed in similar locations in Ionic architecture (Hellmann 2002: 195–196).

The ovolo was derived from the half-round relatively early, as shown by an example attributed to the crowning of a (missing) frieze in the fourth Temple of Dionysos at Yria on Naxos (Lambrinoudakis 1991: 175). As typical for Cycladic architecture, the surface of the ovolo is smooth. Usually, however, Ionic moldings are carved, while Doric ones are painted. The motif employed reflects, in its outlines, the profile of the underlying molding (Shoe 1936: 11). Thus, the cavetto and hawksbeak adopt the Doric leaf, the astragal displays a bead-and-reel, and the ovolo, an egg pattern. Over time, the profile and corresponding decoration change, although this may not occur in such a linear fashion as once assumed (Hellmann 2002: 197–198). Several factors, including regional variations, also played a role.

Foreign Influence: Egypt and the Near East

Scholars have long debated the origins of monumentality in Greek temple architecture. By as early as the ninth century BCE, Greece was absorbing goods and probably some craftsmen from the developed cultures of the eastern Mediterranean. During the eighth century BCE Greek traders were resident at Al Mina in northern Syria (Boardman 1999: 35–46; Kopcke 1992).

Orientalizing pottery displays techniques of incision as well as abstract curvilinear and representational motifs that derive from the Near East. Both the Daedalic style and large scale in sculpture seem to reflect influences from the same area. After the middle of the seventh century BCE, the adoption of a harder stone, marble, and of even larger sizes for kouroi has been attributed to Egyptian inspiration. Even the pose of such figures, with arms at their sides and one foot advanced, and their proportions seem to be modeled after Egyptian statues (Ridgway 1993: 21–57). One might therefore assume similar inspiration in architecture (see Wilson Jones 2014: esp. 94–110).

The details are not so clear, however. Cut-stone blocks were used for wall constructions in the area of Palestine by the tenth and ninth centuries BCE (Shiloh 1979: 1–91). These same sites have yielded Proto-Aeolic capitals that it is likely inspired the Aeolic capitals of northern Asia Minor. Yet Greek works differ technically and/or chronologically. Thus Proto-Aeolic capitals crowned pillars, while Aeolic ones, which first appeared at the end of the seventh century, stood on columns. Palestinian walls were carefully laid in two rows of stretchers with frequent headers to bind the faces together. By contrast, the earliest Greek buildings employed either the two-skin construction with irregular surfaces at the center, as in the Samian hekatompedon, or a single line of blocks, as in the Isthmian temple. It is not until later that Greek construction employs a technique comparable to that of Palestine. Similarly, the use of orthostates at the base of mudbrick walls, which has a long history in the Near East (see Shiloh 1979: 71–77), appears in rudimentary form around 700 BCE in the temple at Ano Mazaraki but becomes more refined locally, as attested in the Temple of Hera at Olympia.

While Egypt is well known for large-scale constructions and the extensive use of stone, the Greeks apparently came into direct contact with this culture relatively late in their development. Mercenaries were hired by the Pharaoh Psammetichos I around 660 BCE and subsequently allowed to establish settlements in Egypt, at Naukratis and elsewhere (Boardman 1999: 114–117). These contacts introduced Greeks to Egyptian monuments. Yet the Protogeometric Heroön at Lefkandi, as well as Geometric vases, as already noted, demonstrate interest in large size much earlier. Similarly, the use of cut-stone blocks for wall construction, which appeared in Samian and Corinthian temples in the first half of the seventh century, predates Egyptian contact (but see Tanner 2003: 129–131).

It is thus unlikely that Egypt inspired these architectural innovations, yet in some cases it influenced their development. The great expansion of the Sanctuary of Hera on Samos and the construction of its first large-scale, dipteral temple around 575 BCE, probably owe a debt to Egypt (Kienast 2001: 38–39). Not only did the architect employ the Egyptian module of approximately 52.3 cm for his building but he also used similar techniques, such as clamps to connect the blocks and construction of the columns in

drums.

As with large scale, so also with stone masonry, Greece shows some tentative beginnings locally. Stoneworking was apparently initiated in the area of Corinth already in the Middle Geometric period (Brookes 1981; Fagerström 1988: 122–123, n. 76), with cut-stone blocks used structurally by the Late Geometric period (Rhodes 1987b: 545). From early Proto-Corinthian times onward, such blocks are increasingly inserted into rubble walls to strengthen them (Rhodes 1987a: 478). The fully stone walls of the seventh-century temples at Corinth and Isthmia may represent the culmination of this practice. Additionally, the uniform height and width of the blocks in the latter suggest adaptation of techniques from mudbrick construction, although with increased size (Gebhard 2001: 53). Still another feature of these two temples, their tiled roofs, may represent local invention, as suggested by the lack of antecedents (Gebhard 2001: 58–61; Winter 1993: 8–12).

Sources for the peristyle are equally difficult to pinpoint. Egyptian architecture is well known for the use of freestanding supports, either rectangular pillars or rounded columns. Yet these are often found in the interior of a structure, such as a hypostyle hall. The enclosure of a building by columns is unusual and the identification of a peristyle in extant examples, problematic (Haeny 2001). A derivation from Egypt is also undermined by chronology, since, as already discussed, the earliest known Greek peripteroi, the hekatompèdon at Ano Mazaraki (circa 700 BCE) and the temple at Ephesos (second quarter of the seventh century BCE) precede the traditional time of contact.

According to A. Bammer, the Artemision peripteros had a predecessor, the “pre-peripteros,” and its form raises further questions of foreign influence. It had columns in the same locations on the exterior and interior, but lacked walls. Bammer proposes a roof between the columns, leaving a central opening. Such an arrangement would recall the Mycenaean megaron with its central clerestory. On the other hand, with a continuous roof throughout, the pre-peripteros would bear similarities to the Egyptian pavilion, which consisted of two rectangular but concentric series of pillar supports, also without walls. This type of structure is represented by the Kiosk of Sesostri I at Karnak (see Haeny 2001: 95–96 and fig. 12).

Different possibilities also existed for roofing the peripteros, some of which may reflect foreign models. A covering may have continued over the entire structure, using the interior columns for support (Kerschner and Prochaska 2011: 80–82). Alternatively, the roof could be carried between the peristyle and the interior columns, much as suggested by Bammer for its predecessor, or it could have extended from the peristyle only to the wall, creating an inner courtyard. The interior columns may then have supported a baldacchino, or canopy, above the image of the goddess. As Bammer notes, the courtyard is characteristic of Near Eastern and Egyptian architecture; the baldacchino is

also known in the Near East. This reconstruction offers a model for the sixth-century hypaethral Temples of Artemis at Ephesos and Apollo at Didyma, with an interior naiskos for the cult-image. That the Ephesians were aware of the Near East and Egypt is demonstrated by small finds in the sanctuary (Hölbl 1993), but direct knowledge and transmission of architectural ideas is more difficult to detect (see Bammer 2001: 81; Wilson Jones 2014: 90).

The early date and relatively remote location of Ano Mazaraki make the attribution of its peripteros to foreign influence more unlikely. Although Egyptian scarabs, presumably dedicated to the goddess as exotic souvenirs, were found in the sanctuary, no other Egyptian objects are reported (Petropoulos 2002: 148–150). Here, the relatively short distance of the columns from the walls may point to a structural function, perhaps derived from wooden wall reinforcements or from the occasional peristyle that supported the roof and protected the mudbrick walls in eighth-century domestic buildings (Mazarakis Ainian 1997: 100–101, 104, 278–279, 389–390). In fact, the portico is similar in depth to that previously identified in phase IA of the Samian hekatompèdon, which according to Coulton (1977: 31) was too narrow to provide much shelter. The origins of the peristyle, at least in mainland Greece, may thus be internal and structural rather than external.

Arguments are also made for local (Bronze Age) models for the Doric column and frieze (Østby 2006; Wilson Jones 2014: 93–94). If the basic components of the Ionic capital reflect structural solutions, as some have argued, its development would have occurred locally, yet the application of volutes to its upper (bracket) member was probably inspired by Near Eastern ornament. So too, the Aeolic capital reflects Palestinian motifs. Antecedents to the fluted column shaft may be attested already in the Late Geometric period on two drums from Corinth (Brookes 1981: 286–289), but the preferred number (16) for early Doric columns and their distinctive upward taper are perhaps borrowed from Egypt (Coulton 1977: 39). Egypt and the Near East were probably also responsible for the introduction of clamps to fasten blocks together, and even their initial forms, yet the Greeks subsequently developed new ones (Coulton 1977: 49). Similarly, after adopting the cavetto and half-round moldings from Egypt, the Greeks created their own variations (Hölbl 1984: 10). It thus appears that the initial steps toward monumentality were taken internally, but exposure to earlier cultures provided Greeks with the additional stimulus of models for technical developments, ornamental elaborations, and further refinements.

FURTHER READING

See Barletta 2001 on the origins of and sources for the orders and Wilson

Jones 2014 for the role of the Greek temple; Coulton 1977 for a seminal discussion of the issues regarding early Greek architecture; Kienast 1996 and Mallwitz 1981 on early peristyles; Marconi 2007 for the function of temple decoration, especially at Sicilian Selinous; Mazarakis Ainian 1997, for a clear overview of the evidence for and evolution of early temples; Gruben (especially 1982 and 1993) and Schuller 1991 on Cycladic architecture; Kerschner and Prochaska 2011 on the material and dating of buildings at Ephesus; Stamatopoulou and Yeroulanou 2002 for recent excavations in Greece; Winter 1993 on early architectural terracottas; and the various contributions to the volume on Greek architecture and Egypt edited by Bietak (2001).

REFERENCES

- Antonaccio, C.M. 1992. "Terraces, Tombs, and the Early Argive Heraion." *Hesperia*, 61 (1): 85–105.
- Auberson, P. 1968. *Temple d'Apollon Daphnéphoros, Architecture*. Eretria I. Bern.
- Bammer, A. 1990. "A *Peripteros* of the Geometric Period in the Artemision of Ephesus." *AS*, 40: 137–160.
- Bammer, A. 2001. "Der ephesische Peripteros und die ägyptische Architektur." In Bietak, ed., 71–82.
- Barletta, B.A. 2001. *The Origins of the Greek Architectural Orders*. Cambridge.
- Barletta, B.A. 2005. "The Architecture and Architects of the Classical Parthenon." In Neils, ed., 67–99.
- Bietak, M., ed. 2001. *Archaische Griechische Tempel und Altägypten*. Vienna.
- Boardman, J. 1999. *The Greeks Overseas: Their Early Colonies and Trade*. 4th ed. London.
- Broneer, O. 1971. *Isthmia I: Temple of Poseidon*. Princeton.
- Brookes, A.C. 1981. "Stoneworking in the Geometric Period at Corinth." *Hesperia*, 50 (3): 285–290.
- Buitron-Oliver, D., ed. 1991. *New Perspectives in Early Greek Art*. Washington, DC.
- Coulton, J.J. 1977. *Ancient Greek Architects at Work*. Ithaca.
- Coulton, J.J. 1993. "The Toumba Building: Its Architecture." In

Popham, Calligas, and Sackett, eds., 33–70.

Demangel, R. 1923. “Le Temple du VII^e siècle,” in *FdD II*, 3 (1): 26–41. Paris.

Des Courtils, J. and J.-C. Moretti, eds. 1993. *Les Grands ateliers d'architecture dans le monde égéen du VI^e siècle av. J.-C.* Paris.

Dobesch, G. and G. Rehrenböck, eds. 1993. *Die epigraphische und altertumskundliche Erforschung Kleinasiens.* Vienna.

Fagerström, K. 1988. *Greek Iron Age Architecture: Developments through Changing Times.* SIMA 81. Göteborg.

Felsch, R.C.S. 1987. “Bericht über die Grabungen im Heiligtum der Artemis Elaphebolos und des Apollo von Hyampolis 1978–1982.” *AA*, 1–99.

Gebhard, E.R. 2001. “The Archaic Temple at Isthmia: Techniques of Construction.” In Bietak, ed., 41–61.

Gebhard, E.R. and F.P. Hemans. 1992. “University of Chicago Excavations at Isthmia, 1989: I.” *Hesperia*, 61 (1): 1–77.

Greco, E., ed. 2002. *Gli Achei e l'identità etnica degli Achei d'Occident.* Paestum.

Gruben, G. 1963. “Das archaische Didymaion.” *JDAI*, 78: 78–182.

Gruben, G. 1982. “Der Burgtempel A von Paros.” *AA*, 197–229.

Gruben, G. 1993. “Die inselionische Ordnung.” In Des Courtils and Moretti, eds., 97–109.

Gruben, G. 1996. “Griechische Un-Ordnung.” In Schwandner, ed., 61–77.

Gruben, G. 2001. *Griechische Tempel und Heiligtümer.* 5th rev. ed. Munich: Hirner.

Haeny, G. 2001. “Peripteraltempel in Ägypten – Tempel mit Umgang.” In Bietak, ed., 89–106.

Held, W. 1998. “Zum Athenaheiligtum in Emporio auf Chios: Eine neue Rekonstruktion und Deutung.” *AA*, 347–363.

Held, W. 2000. *Das Heiligtum der Athena in Milet.* Mainz.

Hellmann, M.-C. 2002. *L'Architecture grecque, 1: Les principes de la construction.* Paris.

Hellmann, M.-C. 2006. *L'Architecture grecque, II: Architecture religieuse et funéraire*. Paris.

Hill, B.H. 1912. "The Older Parthenon." *AJA*, 16 (4): 535–558.

Hoffelner, K. 1999. *Das Apollon-Heiligtum: Tempel, Altäre, Temenosmauer, Thearion*. Alt-Ägina, I.3. Mainz.

Hölbl, G. 1984. "Ägyptischer Einfluss in der griechischen Architektur." *JÖAI*, 55: 1–18.

Hölbl, G. 1993. "Archaische Aegyptiaca aus Ephesos: Vorläufige Beobachtungen zu Neufunden aus dem Artemision." In Dobesch and Rehrenböck, eds., 227–253.

Jameson, M.H. 1974. "The Excavation of a Drowned Greek Temple." *Scientific American*, 231 (4): 110–119.

Jameson, M.H. 1982. "The Submerged Sanctuary of Apollo at Halieis in the Argolid of Greece." *National Geographic Society Research Reports* 14: 363–367.

Jantzen, U., ed. 1976. *Neue Forschungen in griechischen Heiligtümern*. Tübingen.

Kähler, H. 1949. *Das griechische Metopenbild*. Munich.

Kerschner, M. and W. Prochaska. 2011. "Die Tempel und Altäre der Artemis in Ephesos und ihre Baumaterialien." *JÖAI*, 80: 73–153.

Kienast, H.J. 1996. "Die rechteckigen Peristasenstützen am samischen Hekatompedos." In Schwandner, ed., 16–24.

Kienast, H.J. 2001. "Samische Monumentalarchitektur – Ägyptischer Einfluss?" In Bietak, ed., 35–39.

Kienast, H.J. 2002. "Topography and Architecture of the Archaic Heraion at Samos." In Stamatopoulou and Yeroulanou, eds., 317–325.

Klein, N.L. 1997. "Excavation of the Greek Temples at Mycenae by the British School at Athens." *ABSA*, 92: 247–322.

Kopcke, G. 1992. "What Role for Phoenicians?" In Kopcke and Tokumaru, eds., 103–113.

Kopcke, G. and I. Tokumaru, eds. 1992. *Greece between East and West: 10th–8th Centuries BCE*. Mainz.

Kyrieleis, H. 1981. *Führer durch das Heraion von Samos*. Athens.

Lambrinoudakis, V. 1991. "The Sanctuary of Iria on Naxos and the

Birth of Monumental Greek Architecture.” In Buitron-Oliver, ed., 173–188.

Le Roy, C. and J. Ducat. 1967. *Topographie et architecture: Les terres cuites architecturales. La sculpture décorative en terre cuite*. Fouilles de Delphes, II. Paris.

Mallwitz, A. 1972. *Olympia und seine Bauten*. Munich.

Mallwitz, A. 1981. “Kritisches zur Architektur Griechenlands im 8. Und 7. Jahrhundert.” *AA*, 599–642.

Marconi, C. 2007. *Temple Decoration and Cultural Identity in the Archaic Greek World: The Metopes of Selinous*. Cambridge.

Martin, R. 1965. *Manuel d'architecture grecque, I*. Paris.

Matthews, R. and C. Roemer, eds. 2003. *Ancient Perspectives on Egypt*. London.

Mazarakis Ainian, A. 1997. *From Rulers' Dwellings to Temples: Architecture, Religion and Society in Early Iron Age Greece (c. 1100–700 B.c.)*. SIMA 71. Jonsered.

Mertens, D. 2006. *Städte und Bauten der Westgriechen*. Munich.

Neils, J., ed. 2005. *The Parthenon from Antiquity to the Present*. New York.

Østby, E. 1980. “The Athenaion of Karthaia.” *Opuscula Atheniensia*, 13: 189–223.

Østby, E. 2006. “*Continuatio, Renovatio and Innovatio*: The Birth of the Doric Temple.” *AAAH*, 20: 9–38.

Petropoulos, M. 2002. “The Geometric Temple at Ano Mazaraki (Rakita) in Achaia during the Period of Colonisation.” In Greco, ed., 143–164.

Pfaff, C.A. 1990. “Three-Peaked Antefixes from the Argive Heraion.” *Hesperia*, 59: 149–156.

Pfaff, C.A. 2003. *The Argive Heraion. Vol. 1: The Architecture of the Classical Temple of Hera*. Princeton.

Pomtow, H. 1911. “Die beiden Tholoi zu Delphi,” *Zeitschrift für Geschichte der Architektur*, 4: 171–214.

Popham, M.R., P.G. Calligas, and L.H. Sackett, eds. 1993. *Lefkandi II: The Protogeometric Building at Toumba. Part 2: The Excavation*,

Architecture and Finds. Athens.

Rhodes, R.F. 1987a. "Early Corinthian Architecture and the Origins of the Doric Order" *AJA*, 91 (3): 477–480.

Rhodes, R.F. 1987b. "Rope Channels and Stone Quarrying in the Early Corinthia." *AJA*, 91 (4): 545–551.

Richter, G.M.A. 1961. *The Archaic Gravestones of Attica*. London.

Ridgway, B.S. 1993. *The Archaic Style in Greek Sculpture*. 2nd ed. Chicago.

Robinson, H.S. 1976a. "Excavations at Corinth: Temple Hill, 1968–1972." *Hesperia*, 45 (3): 203–239.

Robinson, H.S. 1976b. "Temple Hill, Corinth." In Jantzen, ed., 239–260.

Rodenwaldt, G., ed. 1940. *Korkyra I: Der Artemistempel*. Berlin.

Roebuck, M.C. 1955. "Excavations at Corinth: 1954." *Hesperia*, 24 (2): 147–157.

Schattner, T.G. 1990. *Griechische Hausmodelle: Untersuchungen zur frühgriechischen Architektur*. Berlin.

Schleif, H. 1940. "Die Architektur." In Rodenwaldt, ed., 15–96.

Schuller, M. 1991. *Der Artemistempel im Delion auf Paros*. Berlin.

Schwandner, E.-L. 1976. "Der ältere Aphaia-tempel auf Aegina." In Jantzen, ed. 103–120.

Schwandner, E.-L. 1985. *Der ältere Porostempel der Aphaia auf Aegina*. Berlin.

Schwandner, E.-L. 1988. "Archaische Spolien aus Tiryns. Ausgrabungen in Tiryns 1982/83." *AA*, 269–284.

Schwandner, E.-L., ed. 1996. *Säule und Gebälk*. Mainz.

Seiler, F. 1986. *Die griechische Tholos*. Mainz.

Shiloh, Y. 1979. *The Proto-Aeolic Capital and Israelite Ashlar Masonry*. Jerusalem.

Shoe, L.T. 1936. *Profiles of Greek Mouldings*. Cambridge, MA.

Sinn, U. 2001. "Die Stellung des Hera-Tempels im Kultbetrieb von Olympia." In Bietak, ed., 63–70.

Stamatopoulou, M. and M. Yeroulanou, eds. 2002. *Excavating Classical Culture: Recent Archaeological Discoveries in Greece*. Oxford.

Strøm, I. 1988. "The Early Sanctuary of the Argive Heraion and its External Relations (8th–early 6th c. b.c.)." *AArch*, 59: 173–203.

Tanner, J. 2003. "Finding the Egyptian in Early Greek Art." In Matthews and Roemer, eds., 115–143.

Tilton, E.L. 1902. "The Architecture of the Argive Heraeum." In Waldstein, ed., 105–136.

Von Gerkan, A. 1946/47. "Betrachtungen zum ionischen Gebälk." *JDAI*, 61/62: 17–29.

Waldstein, C., ed. 1902. *The Argive Heraeum*. Vol. 1. Boston.

Wilson Jones, M. 2014. *Origins of Classical Architecture: Temples, Orders and Gifts to the Gods in Ancient Greece*. New Haven.

Winter, N.A. 1993. *Greek Architectural Terracottas from the Prehistoric to the End of the Archaic Period*. Oxford.

CHAPTER 4

Origins and Design of Terracotta Roofs in the Seventh Century BCE

Philip Sapirstein

Introduction

The seventh century BCE was a time of exploration and innovation in Greek architecture. At the beginning of the century, sanctuary architecture was rooted in the vernacular. Resembling enlarged village houses, cult buildings were constructed primarily of mudbrick, wood, and thatch (Mazarakis Ainian 1997). By the end of the century, carefully designed and elaborately embellished temples were crafted in stone and terracotta throughout the Greek world. The basic forms of Doric and Ionic architecture had emerged by circa 600 BCE (Coulton 1977; Barletta 2001; Wilson Jones 2014). Greek monumental architecture was forged through the ambitious experiments of the seventh century.

The evidence for tracing these early developments is scarce. The transitional architecture of the time relied on many perishable materials and was prone to fire and decay. Because of the rapid change in architectural styles over the Archaic period, early temples would have appeared outdated within a generation or two. Many early temples were replaced by a more up-to-date building in the following centuries. Foundations of seventh-century temples are often covered or entirely obliterated, and stone from the superstructure was recut, leaving modern scholars a very incomplete puzzle of restoring the original building's appearance.

The terracotta roof is key to understanding this critical transitional period. Unlike stone, terracotta was seldom recut and reused. Customarily, the debris of a sacred temple was kept within the perimeter of its sanctuary, and archaeologists often excavate massive quantities of deliberately buried tiles. Terracotta is extremely durable, retaining crisp edges, bright paint, and tool marks better than other architectural materials. Early tiles were conceived as rigidly ordered systems comprising a limited number of identical, interlocking tile types. The study and comparison of the broken fragments of one type allow an unusually complete and accurate reconstruction of the parts of a roofing system as well as its overall appearance and metrics. As a result, terracotta roofs represent the primary, or only, evidence for the appearance of many seventh-century monuments.

This chapter describes the development of the earliest terracotta roofs in Greek sanctuaries and their revolutionary manufacturing techniques. Several tile-producing workshops had emerged by circa 600 BCE, with distinct decorative styles and technical features. More than just the two “Corinthian” and “Laconian” types that dominated later Greek roofs, an array of experimental systems appeared in different regions of the Greek world during the Archaic period (Winter 1993). Architectural terracottas also represent a technical challenge that pushed architects to develop new construction methods.

The First Terracotta Roof Systems

It was typical for Greek buildings of the Early Iron Age to be roofed in thatch and mud-plaster. Although these perishable materials seldom survive, pitched or flat roofs are depicted in some drawings and models from the period (Schattner 1990). Terracotta tiled roofs appear in the archaeological record by the middle of the seventh century BCE. Although small, shingle-like terracotta tiles were used much earlier to roof Early Helladic complexes such as the House of Tiles at Lerna, the tradition vanished by the Middle Helladic (Winter 1993: 8–9; Wiencke 2000: 197–307). Despite the rarity of examples, Mycenaean seem to have developed interlocking tile roofs (Iakovides 1990). There is, however, no evidence for terracotta roof tiles after the Mycenaean collapse, and it is hard to imagine how a tile-making tradition could have been kept alive in the relatively crude architecture of the intervening centuries (Wikander 1988: 204–205; Winter 1993: 13; Mazarakis Ainian 1997: 272). Thus, the surviving remains indicate that during the seventh century BCE, Greeks invented new systems of terracotta tiling to roof their most important sanctuary buildings.

Three-peaked antefixes and the first interlocking tile roofs

One of the earliest terracotta roofs was excavated at Olympia. Lacking any certain associations to foundations, the collection of tiles is known only as “Roof 1” (Heiden 1995: 12–18, 171–172). Given that Archaic Greek terracotta tiles are typically reserved for temples and treasuries, Roof 1 probably belonged to an early temple to Hera or Zeus. The system is plain, yet innovative. Except for a layer of purified pale yellow clay applied to the surfaces, which would be visible on the assembled roof, the tiles are

essentially undecorated. The clay body is tempered with brown chips of mudstone and fired various hues from reddish-brown to greenish-yellow. The coarse fabric shows through on the underside and back of the tiles, which would have been hidden on the assembled roof.

The regular tiles mix attributes of the later Corinthian and Laconian systems. The covers are curved, as in the developed Laconian system, and follow a low arc ([Figure 4.1b](#)). The pans are horizontal on the bottom, as in the developed Corinthian system, but they have a slightly concave curvature maintained across the whole top profile. When assembled and viewed in profile, the modest curvatures of the pan tiles respond to the raised convex arcs of the covers.

The design funneled water down the central axis of the pan. To keep water from penetrating the joints, the covers overlapped the sides of the pan tiles. At its back, the pan tile was overlapped by the pan in the row above by about one-sixth of its full length ([Figure 4.1a](#)). Covers likewise overlapped each other to maintain a seal, but because they rested on top of pans they had to be shifted forward relative to the front edges of the pans. Unlike the steeply sloped thatch roofs that they replaced, the Olympia tiles were laid close to the horizontal, which would help keep them in place while sloping just enough to promote drainage.

The lowest row of covers, at the eaves of the roof, are specially articulated as a three-peaked antefix ([Figure 4.1Ec](#)). The antefix is indistinguishable from a normal cover over most of its length, facilitating its interlocking with the cover in the row above. The clay, however, has been scooped from the upper front edge in two places so as to articulate two peaks at the sides and one at the apex. The scoops become increasingly shallow and blend into the convex arc of the normal cover about 12 cm from the front edge. Judging by the high variability in their profiles, the peaks must have been scooped out freehand in the wet clay just after the cover was shaped ([Figure 4.1d](#)).

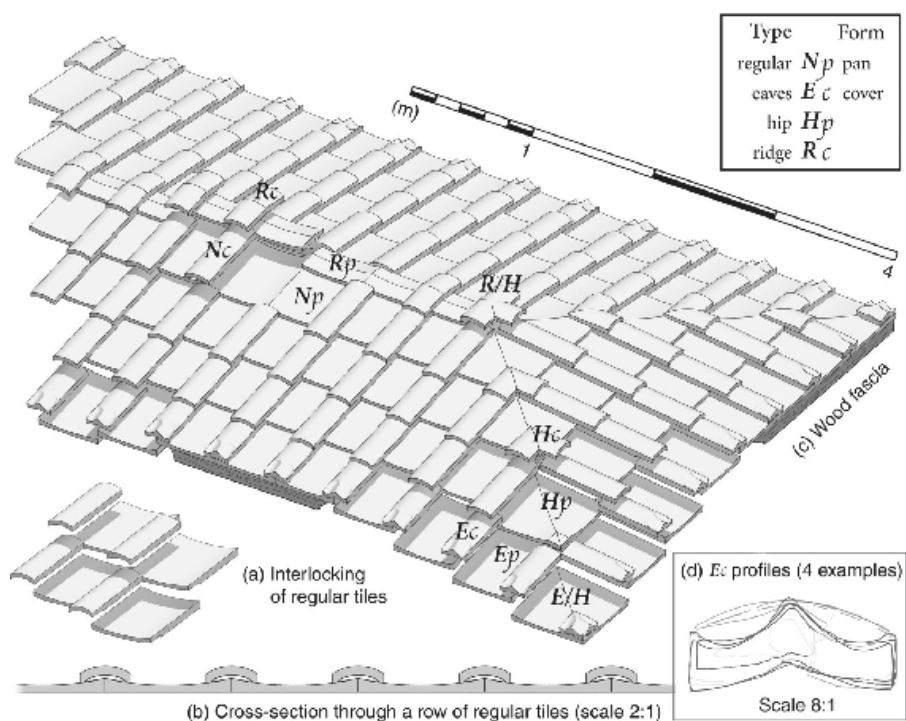


Figure 4.1 “Roof 1,” Olympia, schematic reconstruction. (The width of the roof is unknown but was probably greater than the eight tiles rendered here.)

Source: P. Sapirstein.

There appears to be no difference between the eaves pan tiles and the regular pans (Figure 4.1Ep). To direct rainwater away from the walls below, they would have projected beyond the perimeter of the building. A wooden fascia must have supported the outside edge of the eaves pans and masked their plain undersurfaces (Figure 4.1c).

The roof is hipped, meaning its adjacent sides slope up toward the center of the roof. The lack of any pieces which could be identified as a *sima* – the element that caps the gable ends on the short end of the building – indicates that the roof was hipped on all four sides. Once assembled on the roof, the perpendicular vertical rows of covers at opposite sides of the hip would have culminated in a hip cover, whereas the vertical rows of pans would have culminated in a hip pan (Figure 4.1H). Special tiles were required. The hip pan and hip cover, while complex in appearance, share a simple design principle: they combine elements of two regular tiles from the perpendicular slopes of the roof, as they would have intersected along the diagonal hip line (Figure 4.1Hc–Hp).

Finally, ridge covers and pans were created for the apex of the roof. Generated upon the same principle as the hips, the ridge tiles combine pans and covers from the opposed long sides of the roof at the ridge line (Figure

4.1Rc–Hp). Although no fragments are preserved, a hip-ridge cover must be restored at the two ends of the ridge, capping the junction with the hips at the front and back of the building (Figure 4.1R/H). Likewise, hip-antefix tiles must have been created at the eaves at the outside corners of the roof (Figure 4.1E/H).

I have taken care to describe the geometry of the Olympia roof in detail because it shares the design principles of the Greek roofing systems developed in the following generations. The design results from a logical application of the regular cover-pan profile to each component of the roof. The traditional gabled or apsidal forms typical in earlier thatch roofs must be abandoned for a hipped system, which utilizes the same regular tiles around all four sides of the building down to the eaves. The specialized hip and ridge tiles are best understood as the combination of a pair of regular tiles at opposite sides of the line of the hip and ridge, respectively. The three-peaked antefix cut into the eaves cover is the only deviation from the regular profile, although this concave profile at the face of the antefix responds to the concave curvature of the eaves pans.

“Roof 1” may be the first known terracotta roof since the Bronze Age. Many of its fragments were recovered from sixth-century contexts after the time of its destruction (Heiden 1995: 14–16). At least two pan fragments, however, appear to have been discarded during the building’s construction and indicate a *terminus ante quem* for the roof in the third quarter or middle of the seventh century BCE, for the tiles were recovered in a well along with pottery and bronzes, almost all of which date to the first half of the seventh century, although one helmet may belong in the third quarter of the century (Mallwitz 1999b: 200–201; Gebhard 2001: 55, n. 70). A second roof from Olympia, Roof 2, replicates the system at a smaller scale. Possibly belonging to a treasury, its context date is somewhat later than that of Roof 1. A third roof of the system is testified by a single fragment from Delphi, an antefix with “scooped” peaks at its front face comparable to those at Olympia (Le Roy 1967: 28; Badie and Billot 2003: 283).

The Proto-Corinthian roof system and the unification of design

While the Olympia system represents a major transition to a durable, monumentally scaled roof, the early Apollo Temple at Corinth implemented a more impressive roofing system (Rhodes 2003; Sapirstein 2009). Also constructed during the second quarter or middle of the seventh century BCE, the temple was replaced by the well-known mid-sixth-century peripteral temple, which overshadows the Roman forum to the present day (Salmon 1984: 59–62; Winter 1993: 12–18). Thousands of stone blocks and terracotta

tiles from the early temple were buried beneath the newer temple or reused nearby, permitting the visualization of much of the building despite the loss of its foundations. Its massive terracotta roof is the earliest example of the Proto-Corinthian roof system.

At first glance, the assembled Proto-Corinthian roof is strikingly similar to the first three-peaked roof from Olympia (Figure 4.2). The top profiles of the covers and pans are almost identical, as is the mudstone-tempered fabric coated with a pale yellow slip on the upper surfaces. The roof is also hipped on all four sides, with hip and ridge tiles derived from the regular tile geometry in an identical manner. There are, however, several key differences. About one in seven tiles is painted black, and the roof must have been striped or checkered. Rather than a three-peaked antefix, the cover at the eaves has a gabled shape with one peak at its front, more like the standard Corinthian peaked covers of later centuries (Figure 4.2Ef). Although the combined spacing of a pan and cover at Corinth and Olympia are similar, the Corinth roof has wider covers and a correspondingly reduced exposed area of the pan. Its designers also kept the front faces of the covers and pans flush in each row, unlike the staggered spacing at Olympia with covers projecting well beyond the corresponding pans.

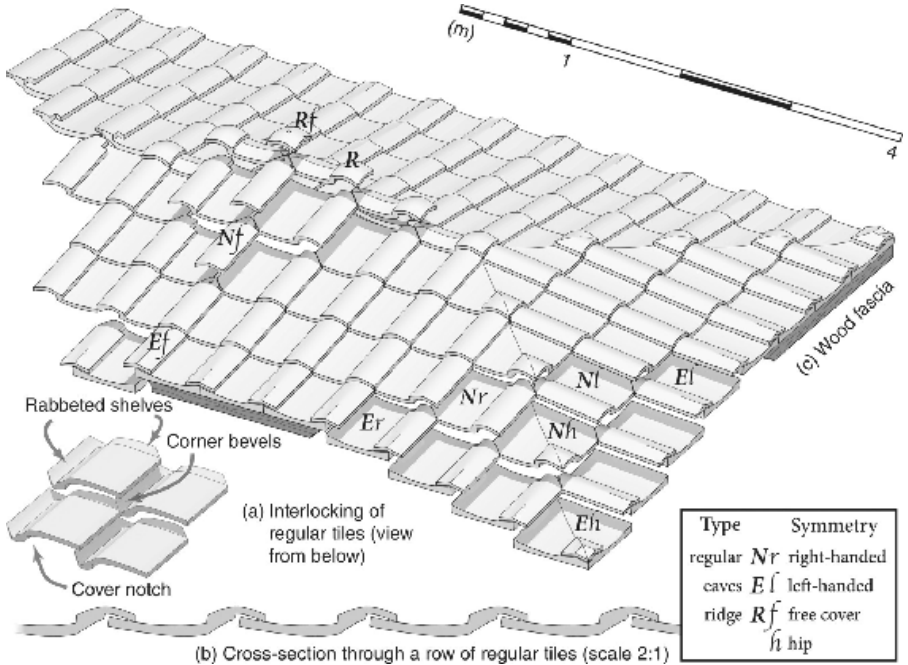


Figure 4.2 Proto-Corinthian roof, Corinth, schematic reconstruction. (Black-painted tiles have been omitted. The original width of the roof was greater than eight tiles.)

Source: P. Sapirstein.

This alignment is due to the most radical characteristic of Proto-Corinthian roofs: the covers and pans are formed in “combination.” Each tile unit fused together a pan and cover. Not only the regular tiles, but also the special eaves-antefix, hip, and ridge tiles are in combination. Consequently, although the assembled roof resembles that at Olympia, the internal configuration and interlocking of the Corinth roof is much more complex. Several cuttings are required for neighboring combination tiles to interlock. On the bottom, the whole front edge was rabbeted into a shelf to fit over the curved back edge of the pan-cover unit in the row below (Figure 4.2a). The corresponding back inside edge of the cover was notched where the rabbet of the tile above could not be cut without weakening the tile. Bevels were also cut at the corners where diagonally adjacent tiles on the roof would otherwise have intersected. Finally, tiles were formed in either “right-” or “left-handed” versions, with these cuttings mirrored, which is a requirement for interlocking with the hip tiles (Figure 4.2Nr–h–l). A free cover was required where opposite-handed pans met on the roof (Figure 4.2r–l–f).

Not only must they have required careful planning, but also these new features also represent a substantial investment of labor, not just for shaping the tiles but equally in the secondary cutting required during installation on the roof. It may seem curious that the designers at Corinth put so much time and thought into an innovative interlocking system that was almost entirely concealed once the roof was assembled. That is, a visitor from Olympia would have noticed little difference between the roofs, besides the moderately increased scale and the black stripes at Corinth. An advantage of combination tiles is their increased stability compared to the unattached covers at Olympia, which must have been prone to shifting. It also suggests a more rigorous consistency in design. Rather than the two independently profiled pan and cover types at Olympia, the Proto-Corinthian combination tiles are reduced to a single, modular pan-cover unit of equal length and width. At Olympia the designers had already decided to make their hip and ridge tiles in combination by merging adjacent regular tiles across the hip and ridge line, respectively. The Proto-Corinthian tiles take this concept further by making every tile in combination. The Proto-Corinthian hip and ridge tiles acquired additional complexity by being essentially the fusing of the two halves of differently oriented regular combination tiles into one unit (Figure 4.2Nh/R/Eh).

Only a handful of other Proto-Corinthian roofs are known. The best preserved belonged to the early Poseidon Temple at Isthmia of the mid-seventh century, whose roof and stone elements are both very similar to those of the Apollo Temple, although slightly more sophisticated (Broneer 1971: 40–53; Hemans 1989; Gebhard and Hemans 1992: 34–40). The regular, eaves, hip, and ridge tiles are almost identical in profile and dimension to those from Corinth, with the exception of a small raised triangle added to the front of the eaves pan and the elimination of any black tiles. Fragments excavated at Delphi testify to at

least three similar roofs there (Le Roy 1967: 21–8). The Proto-Corinthian roofing system is unlikely to have lasted beyond the seventh century, as the only independently dated examples are around mid-century. Combination tiles were eventually abandoned altogether for separate covers and pans, which are easier to manufacture and install.

The Argive roof system: later developments with three-peaked antefixes

Although the Proto-Corinthian system ultimately vanished, the prototype at Olympia was adapted and embellished in later seventh-century sanctuary roofs. Although the system developed the attributes of later Corinthian-style roofs, many innovations can be traced through examples in the Argolid (Billot 1990; Winter 1993: 149–157; Badie and Billot 2003). This Argive tradition was as important as that of the Corinthia itself in the synthesis of the later “Corinthian” roof system.

A well-preserved late seventh-century roof from the Sanctuary of Aphaia (at Aigina) is the most complete representative of the early transitions toward a conventional “Corinthian” roof (Schwandner 1985: 72–75, 126–129; Winter 1993: 153–155). The Aphaia roof belonged to a predecessor of the famous peripteral temple now standing on the site. Its interpretation has been complicated by the large deposits of burned red- and black-painted Argive roof tiles from the late seventh century, together with a typologically much later set of pale-slipped Argive-Corinthianizing *sima* tiles of circa 570 BCE. Nancy Winter offers the most plausible interpretation: A late seventh-century sanctuary building – probably the first temple – must have been dismantled to make way for the first stone Doric temple, Aphaia I, in about 570 BCE. The regular, antefix, eaves, and ridge tiles from the early Argive-style roof were all reused for the new stone building, but new *sima* tiles were created for the front and back façades of the building (Figure 4.3).

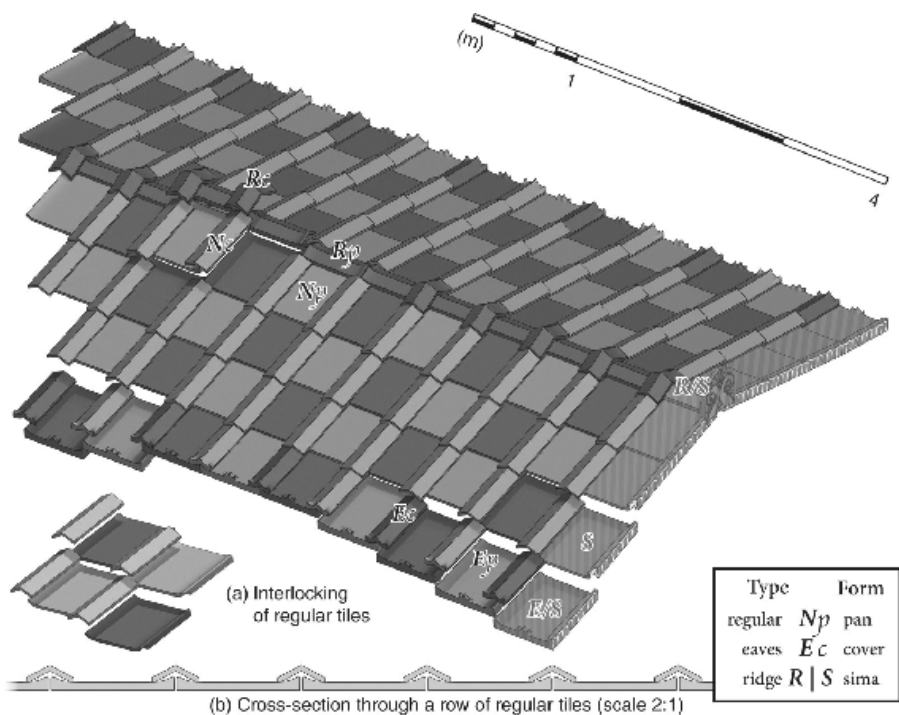


Figure 4.3 Aphaia Sanctuary, Aigina, Early Argive roof, schematic reconstruction. (The checkered pattern of red and black tiles is hypothetical, as are the hatched areas. The original width of the roof was greater than eight tiles.)

Source: P. Sapirstein.

The early set of tiles reveals several alterations of the early Olympia system. First, all of the separately formed covers are peaked rather than rounded (Figure 4.3b). As at Olympia, the ridge tiles fuse a pair of pans or covers from the opposite slopes of the roof, but the ridge covers are peaked at a steep angle and would have created a jagged pattern at the apex of the building (Figure 4.3Rc–Rp). The three-peaked antefixes are also exaggerated. Rather than scooping clay out from the front of an arched cover tile, the peaks are built up by adding clay on top of the peaked antefix cover (Figure 4.3Ec). A half-sized “false” antefix is added to the center of the eaves pan, an enlargement of the small peak in the same position on the Isthmia roof. The roof was exuberantly polychrome, the bright red covers accenting a pattern of black, red, and perhaps pale yellow pan and eaves tiles. There are no fragments of hip tiles among the otherwise well-represented material, and the early Argive-style roof was probably gabled. A large red- and black-painted palmette akroterion attached to a ridge pan tile was also reused in the Aphaia I temple roof. The early sima tiles, which must have been discarded elsewhere, have been restored in the drawing from parallels in Delphi (Le Roy 1967: 28).

Over the following decades, both Corinthian and Argive workshops gradually converged on what would eventually become the conventional Corinthian style roof (Winter 1993: 19–32). From the prototype at Aigina, the antefixes were further enlarged and elaborated with stamped relief decoration. A compass-surveyed, painted guilloche pattern was applied below the antefix to the front of the eaves pans. Hipped roofs were rare after the early sixth century BCE. The gable ends were fitted with a raised sima over the pediments at the front and back of the building, which also gained increasingly elaborate compassed and painted decoration. Finally, the ridge was emphasized by the addition of palmettes above the ridge cover tiles, while akroteria were added to the corners of the roof.

Circular geometry and the Laconian roof system

A different approach to roof design originated in Laconia. Although the monuments of Sparta are less well documented than the previous examples, the Laconian roof system also appeared in the seventh century BCE (Winter 1993: 95–101). One of our best examples of an Archaic Laconian roof is found at Olympia, however, belonging to the early peripteral Hera Temple of circa 600 BCE.

The well-preserved roof at Olympia exhibits the major features of seventh-century Laconian fragments (Heiden 1995: 65–68, 188–189). Like all early Laconian roofs, every tile was painted black and fired in a reducing kiln atmosphere, giving the surface a gloss not found on contemporary Corinthian or Argive roof tiles. A striking aspect of the fragments from Olympia and Laconia is their circular geometry. It is not just that the cover and pan tiles are rounded but also that when viewed in section they correspond almost exactly to segments of compassed circles. Thus, the covers resemble a bisected pipe, whereas the pans resemble inverted cylindrical sections whose upper diameter is very close to twice that of the covers. The Spartans developed a novel method for interlocking the semi-cylindrical units. Rather than the systems of rabbeted shelves and bevels of the northern Peloponnese, a modest change in diameter from the front to the back of each tile permits adjacent tiles to interlock (Figure 4.4a). Covers expand slightly toward the front, so as to fit over the narrower back end of the cover below. Conversely, the pans taper slightly toward the front so as to slip inside the wider back end of the pan below.

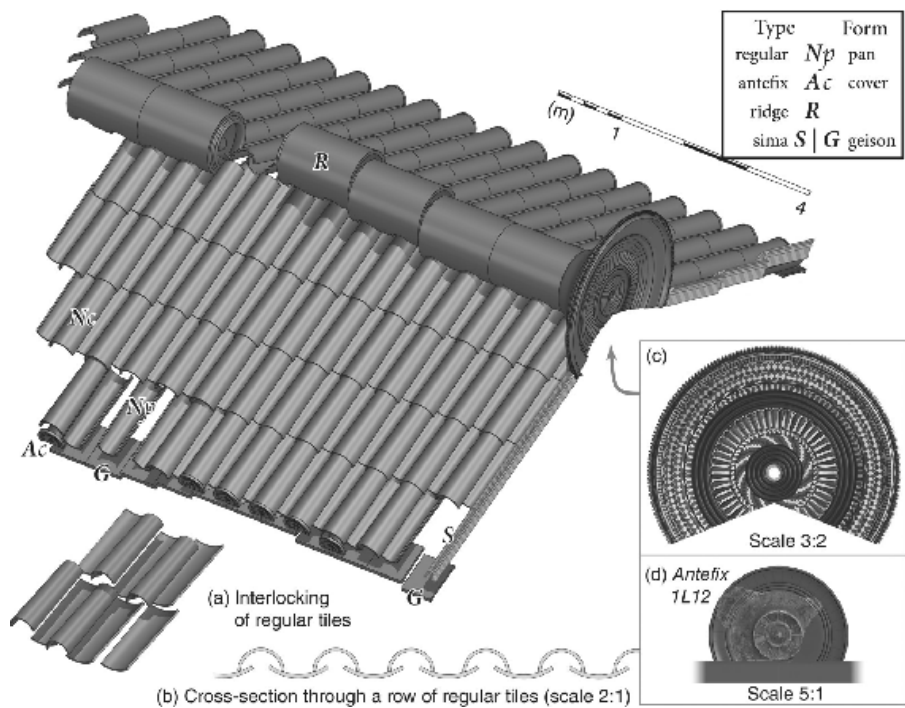


Figure 4.4 Heraion at Olympia, Laconian roof, schematic reconstruction. (The restoration of hatched areas is uncertain. The original roof was about eight times wider than shown here, almost 19 m across the façade.)

Source: P. Sapirstein.

At the eaves, the front face of the final cover was capped with a plaque. The Laconian antefix was formed by joining a flat, circular sheet of clay to the cover opening. After the antefix was painted black, the face was decorated with incised lines. Carefully etched by means of a compass, typical early Laconian antefix decoration was limited to concentric circles and radial crescent patterns resembling a whirligig. The Olympia roof, however, sported a more elaborate, molded antefix (Figure 4.4d). Next, the incised pattern was accented with reds and whites painted directly over the black background, a light-on-dark technique adapted from pottery of the time. Finally, the lower portion of the antefix was cut back to a horizontal base, where it would have rested on the only flat terracotta element of the roof, a geison tile (Figure 4.4G). This tile projected at a low slope from the eaves of the building and supported the lowest row of pans and antefixes, eliminating the need for the wooden fascia at the eaves of the northern Peloponnesian roof systems.

At the apex of the roof, the ridge tiles resemble semicylindrical covers of large diameter – probably equal to that of the regular pans (Figure 4.4R). Rather than tapering over its length, the ridge tile is equipped with a flange at one end that could fit inside the next tile in line and funnel rainwater down to the regular pans upon which it rested. The lower edges of each ridge tile had

to be trimmed carefully to match the undulating profile of the row of regular pans and covers below (Figure 4.4b).

Given the complex curvatures involved, the Spartans appear never to have attempted a hipped roof, preferring instead a two-sloped gabled roof. Accordingly, they were probably the first to develop decoration for the front and back ends of the gable. In a solution analogous to the capping of the lowest row of covers with a circular sheet of clay, a special type, the disk akroterion, was slotted into the open ends of the ridge tiles at both the front and back. The earliest of these disks are difficult to identify, since they resemble a large, black dish (Winter 1993: 101–102). The more elaborate akroteria at Olympia, however, are brilliantly painted with a wild array of compass-incised patterns radiating around the profiled front face (Figure 4.4c) (Yalouris 1972). The dimensions of the akroterion at Olympia are stupendous. At approximately 2.4 m its diameter is triple that of the ridge tiles, and the akroterion was formed and fired in one unit weighing almost 700 kg.

The one element missing from the Olympia assemblage is the sima, which capped the free ends of the final pans at the front and back of the roof (Winter 1993: 104–106). The simas from Sparta, the only non-circular feature of Laconian roofs besides the geison tile, are a long strip with teeth cut from the upper edge whose back side would clip over the free end of a pan tile, and whose front face sheathed the woodwork below (Figure 4.4S).

While the clay of the Olympia roof appears to be local, the design is almost identical to roofs from Laconia, a type otherwise uncommon in the sanctuary. We may assume an expert artisan from Sparta, or perhaps a whole workshop, traveled to Olympia to oversee the project. The individual Olympia tiles are bigger than anything recovered in Laconia, with dimensions close to 50 percent larger than the typical Laconian gauge. According to my measurements, typical cover and pan tiles from several roofs at Sparta have diameters of approximately 26 and 52 cm, respectively. Their equivalents at Olympia have diameters of approximately 38 and 77 cm, respectively. Other tile gauges are represented in Sparta, however. The dimensions of the Olympia roof terracottas are only matched by those of an ambitious temple project at Corfu, considered next.

The flamboyant Northwest Greek roof system

A wildly experimental roof system developed in the ambit of Corfu, the foremost Corinthian colony of Northwest Greece. The best-known examples are at Thermon, dated to the 620s BCE; Corfu, from the final decade of the century; and Kalydon, from about 600 BCE (Winter 1993: 110–121). The Corfu temple, perhaps dedicated to Hera, sits in what is now the park of Mon Repos (a former royal villa). Its roof is the best preserved of the three sites

(Sapirstein 2012). Its elaborately molded, brightly painted, and oversized roof terracottas suggest a competitive streak among the Corfiotes, whose ambitious new temple roof surpassed those of the Corinthia, as well as the nearby Italian colonies, a short sail from Corfu across the Adriatic (Figure 4.5).

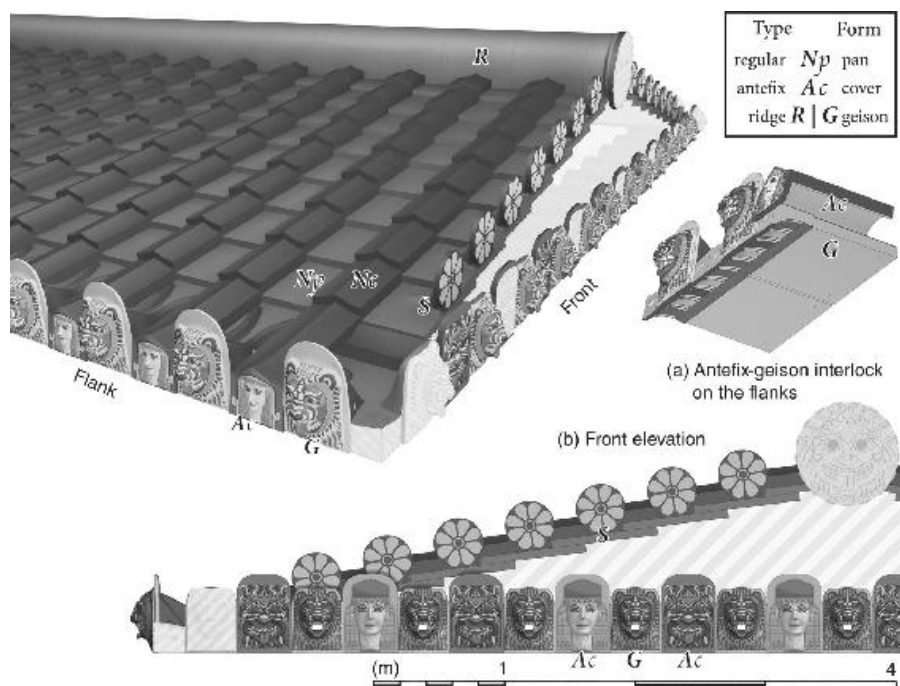


Figure 4.5 Mon Repos, Corfu, Northwest Greek roof, schematic reconstructions. (The restoration of hatched areas is uncertain. The original width of the roof was greater than 13 tiles.)

Source: P. Sapirstein.

The flat pans and peaked covers are separate units, with the pans painted red and the covers black. While the shape and coloring resemble examples of the Argive system such as the early Aphaia roof, the individual pieces are much bigger. The smallest element of the Mon Repos roof, the covers, are an amazing 10 cm thick. At approximately 35 kg each, they outweighed the heavy Proto-Corinthian combination tiles. The ridge at Mon Repos resembles that of the Laconian system. The ridge tiles are massive semicylindrical pipes that weighed almost 200 kg each (Figure 4.5R). While none are preserved at Mon Repos, disk akroteria inspired by Laconia may be restored to the front and back of the ridge line based on comparable fragments painted with a large gorgoneion from the Kalydon roof.

The Northwest Greek roof system introduced a number of innovations. One is the series of polychrome lion heads attached to the eaves tiles (Figure 4.5G).

Patterned on Neo-Assyrian sculpture, the lions funneled rainwater away from the building through their gaping jaws (Mertens-Horn 1988: 28–29). Over 60 cm tall, including the plaque, the molded heads and attached eaves pan weighed about 140 kg apiece. Also incorporating the function of a geison tile, the pan curved down toward its front edge and was painted with a garish series of black, purple, tan, and white tongues on the projecting underside (Figure 4.5a). The structurally daring system was reinforced by struts behind the lion head connecting it to the pan, and it eliminated the need for a wooden fascia to support the eaves tiles.

Antefixes were needed to cover the space between the lion waterspouts. The hanging plaque attached to the front of the antefix protects this space, analogous to the plaque of a Laconian antefix (Figure 4.5a). The Northwest Greek designers, apparently determined to decorate every exterior surface of the roof in reliefs, molded the plaques with female faces in the Daedalic style, painting the hair and plaque in various colors. A variant form of the lion waterspouts was repeated at the front and back of the building interspersed by antefixes 60 cm high, this time taller than the lion heads (Figure 4.5b). These tall antefixes were decorated with either a large Daedalic maiden or a gorgoneion.

Especially at the front of the building, the Northwest Greek designers had transformed the basic elements from the Peloponnese into a tall, relief-decorated panel running along the eaves. The reliefs were alien elements to other contemporary Greek roofs, and animal-head waterspouts on early roofs in Etruria may have inspired their introduction at Thermon and Corfu (Winter 2009: 77–80; Sapirstein 2012). Although articulated as separate elements, the molded eaves decoration was converging on the continuous decorated panel of a sima tile, which was developed contemporaneously in other regional systems. The Northwest Greek introduction of the lion waterspout was immortalized in Greek architecture, which standardized the lion-waterspout sima in countless later examples (Mertens-Horn 1988: 16–18, 28–52).

A second component of Greek architecture, the pediment, is prefigured at Corfu. The Mon Repos roof must have been gabled, since its regular tiles are not proportioned correctly to fit with a hipped roof (Sapirstein 2012). In lieu of a continuous sima, the final row of pans was decorated with a raised, disk-shaped rosette ornament that resonated with the disk akroterion at the apex (Figure 4.5S). However, the lion waterspout-antefix cycle at the eaves is repeated around all four sides of the roof, recalling the hipped roof systems of the seventh century that also repeated the pattern at the eaves on both the fronts and flanks. Thus, by combining elements of North Peloponnesian hipped roofs with a Laconian gabled roof, the Mon Repos roof created a triangular space at the front and back façades of the temple. Grounded in Peloponnesian roofing traditions, the Corfiot designers had synthesized an early type of pediment, which would be formally articulated in the ensuing

Doric and Ionic stone architecture ([Figure 4.5b](#)).

Tile Manufacture and Technical Innovation

Many of the inferences noted in the foregoing sections about the process of design grew out of my study of how Archaic tiles were manufactured. A closer examination provides insight into why Greek tiles were designed in this fashion and has much significance to our understanding of architectural innovation in general (Sapirstein 2009). The technical challenge of producing a thousand or more identical, interlocking units from raw clay was formidable. The manufacturing of interlocking tiles requires a rigorously ordered sequence of actions, which has been documented, largely unchanged, in modern Mediterranean tile works (Hampe and Winter 1965). After gathering and mixing clay, artisans would pack the wet clay into an open-topped mold that shaped the bottom surface and sides of the tile. The sides of the frame were profiled to guide a straightedge over the top, used to shape the upper surface. This system represents an early notion of the molding – an extrusion into the third dimension of a two-dimensional profile – which is a fundamental approach to decoration in later Doric and Ionic architecture.

Since the exact positioning of the frame was difficult to control, the tiles vary considerably in thickness, whereas their top and bottom profiles are fairly consistent. After drying, the tiles were lifted, and artisans would cut out freehand the shelves needed for interlocking. Variations in these cuttings and the thickness of each tile introduced enough irregularity for it to be difficult during installation in the roof to achieve a watertight mesh between adjacent tiles. The solution was a laborious tailoring of every fired tile to improve the fit. Copious tool marks on almost every seventh-century tile reveal the trimming was done quite delicately, with a small chisel, to avoid breaking the friable terracotta. Chiseling more than a thousand tiles on a roof must have been very demanding, especially when one realizes that the craftsmen must have been balancing on the roof while they trimmed each tile to its final position. Consequently, early Greek tile technology demanded a considerable investment, and it is no surprise that throughout the Archaic period tile roofs are limited primarily to major sanctuary buildings (Wikander 1988: 205).

The emergence of terracotta roofs is paired at Corinth, Isthmia, and elsewhere with the first cut-stone masonry. The solutions to the challenges of manufacturing and installing tiles inspired important innovations subsequently incorporated as masonry techniques. The first is “band anathyrosis,” the Greek masonry technique of cutting back roughly most of a block’s joint face and leaving a dressed, raised band along the edges of the joints, the only place where the workmanship could be seen on the finished wall ([Figure 4.6](#), right). The labor-saving method appears in early sixth-century Greek stone masonry

(Coulton 1977: 46; Ginouvès and Martin 1985: 105) but is attested much earlier on tiles, first in the mid-seventh-century Proto-Corinthian temple roofs. A simpler form of anathyrosis in stonework, where joint faces are hollowed out on the interior, is also present in the masonry at the early Corinth and Isthmia temples (Rhodes 1987: 478; Gebhard 2001: 46). On the roof tiles, however, a narrow, raised band of clay was left at the outside edges of the rabbeted shelves cut into the bottom of each tile (Figure 4.6, left). Cut before the tile had fully dried, the raised band on the shelves must have been intended to reduce the surface area that would be retooled during installation on the roof. The band is extended in the Isthmia tiles, apparently in reaction to problems encountered at Corinth, where rabbeted shelves are more extensively chiseled. Anathyrosis was subsequently standardized in the Archaic Corinthian and Argive roof systems, appearing, for example, on the pans of the early Aphaia roof.

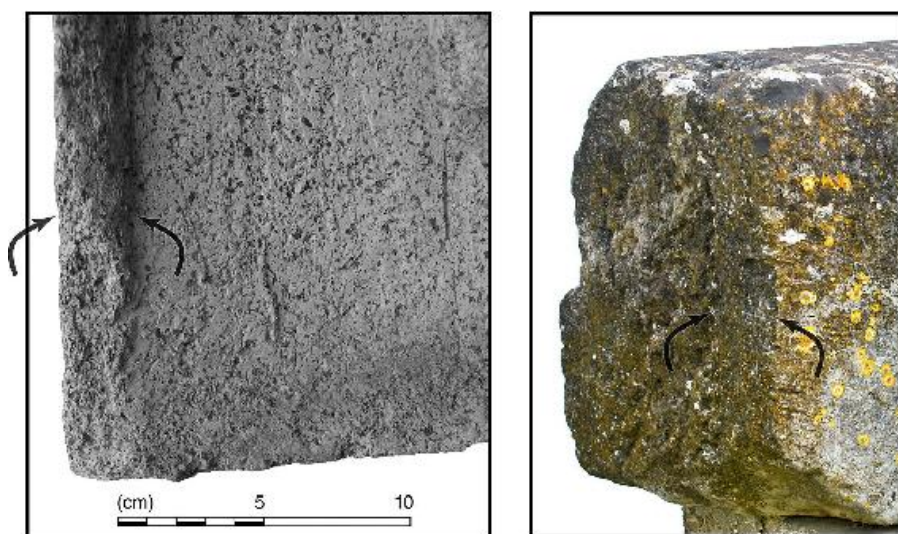


Figure 4.6 Band anathyrosis: on the rabbeted shelves of Protocorinthian tiles (left), and on the joint face of the architrave from the Temple of Artemis, Corfu (right). On the tile, the raised lip runs along the free edge of the cover (left: FP 329, Corinth Museum, view of underside.)

Source: P. Sapistein.

The introduction of tiles generally conditioned the developments of the structure below. The terracotta roof is about twice as heavy per unit of area than its equivalent in thatch, reaching 100–250 kg/m² in the Proto-Corinthian and Northwest roof Greek systems. The added bulk of tiles and reinforced wooden supports demanded a more robust structuring of the walls below, as can be seen in the early Corinth temple's employment of a stone cornice on top of a timber-reinforced mud-brick wall (Rhodes 2003: 88–91).

Tile design also set the stage for the use of pattern in Doric architecture. The

first tile systems rely on a modular design, multiplying many identical units over the width and length of a roof. The architects must have decided on the measurements for this tile module – which was always square in plan in Greek hipped roofs – and multiplied it across the width and length of the roof. This calculation would have been necessary to determine not only the number of tiles to make but also the overall dimensions of the building (Gebhard 2001: 41). The tile module was further subdivided by the decoration applied to later seventh-century tiles. Stamped or compass-surveyed patterns were carefully repeated along whole fractions of the tile length to maintain a continuous, unbroken pattern across the courses of tiles at the eaves of the roof (e.g., the tongue pattern restored at Aphaia and Corfu, [Figures 4.3S, 4.5a](#)).

Thus, in tile roofs we see the first evidence for the rigorous, modular approach to temple design that is so characteristic of later Doric architecture. The logic of Greek roof systems prefigures the carefully planned repetitions of geometric patterns throughout Doric architecture. The spacing of faceted columns, the alternation of triglyphs and metopes at the frieze, and the gridded guttae descending from regularly spaced mutules were harmoniously orchestrated through geometrical relationships, uniting the Doric temple façade from foundation to the roof.

Conclusions

After this brief review of major seventh-century monuments, we may reexamine the origins of interlocking terracotta tiles. The early Olympia roof offers a solution to one longstanding problem. Owing to the early discovery of the Proto-Corinthian roof at Corinth and initial reports of a circa 700 BCE construction date, the early Apollo temple was long regarded as having the earliest known Archaic terracotta roof (Robinson 1976: 212). However, researchers have struggled to explain how such complex, regularly formed, and large interlocking tiles could have been developed without antecedents (Schwandner 1990; Wikander 1992: 153–156). Although the context evidence from Olympia and Corinth does not indicate that one building was necessarily earlier than the other, I have argued here that the Olympia roof offers an excellent prototype for the complexities of the Proto-Corinthian combination system. We still do not know what inspired the Olympia roof, although we could imagine a clever artisan might have wholly invented the system.

The first tile-makers must have been knowledgeable potters whose expertise in mixing clays, constructing large objects like storage jars, and operating kilns are prerequisite to manufacturing terracotta tiles. The persistent application of circles to the profiles and decoration of the early Laconian roofs reveals a strong connection to the manufacture and decoration of pottery.

Although circular in section, even the earliest Laconian regular tiles appear to have been shaped in a frame like the tiles of other systems, probably because of the more consistent profiling achieved by this method. The elaborate antefixes at Olympia have a lathed, circular molding on their decorated faces, which clearly was thrown on the potter's wheel, leaving radial grooves on the back surfaces (Figure 4.4d). The first Laconian disk akroteria are also wheel-made, with characteristic concentric grooves left by potter's fingers on the undecorated surfaces. However, without earlier context evidence it is uncertain whether Laconia is more than an attractive candidate to be the region where tiles were first re-invented in archaic Greece (Skoog 1998: 21–26; Mallwitz 1999b: 203–205; Aversa 2002: 233).

A separate tile-making tradition emerged in Etruria by the latter half of the seventh century at Acquarossa, Murlo, and Rome (Winter 2009: 7–9, 49–58). Again, no roofs as early as those of the northern Peloponnese have yet been discovered in Etruria, and the Corinthians are believed to have taught Etruscans tile-making, on the basis of a tradition reported by Pliny (*NH* 35.43.152; Williams 1978; Wikander 1992: 159). Early Etruscan roofs, however, also include wheel-made elements (Winter 2009: 117–120, 513). Their rudimentary interlocking system represents another possible, but unproven, inspiration for Greek terracotta tiles.

The early roofs at Olympia, Corinth, and Isthmia are so close in their design and fabrication that we must assume direct contact among the artisans who created them. The three buildings are dated within a quarter century or less of each other, and all three roof projects may indeed have been overseen by a single artisan-architect. The Olympia prototype appears to have been the immediate precursor of the Corinth roof, whose combination tiles afford a more regular design and increased stability but in turn created a host of new difficulties in interlocking the tiles. In this case, we may even be witnessing the developing career of an individual artisan as he oversaw contracts at Olympia and within the ambit of Corinth. The first generations of all Greek tile makers were surely talented and widely traveled individuals, knowledgeable in the arts of pottery, architecture, and geometry.

ACKNOWLEDGMENTS

The roofs visualized here are based on my dissertation research. I thank the respective Ephorates of Prehistoric and Classical Antiquities, the American School of Classical Studies at Athens (ASCSA), the British School at Athens, and the Athens Department of the German Archaeological Institute for permitting and facilitating my work on the material in the archaeological museums at Aigina, Corfu, Corinth, Delphi, Isthmia, Olympia, and Sparta. The research would not have been possible without the generous institutional

support of the American Council of Learned Societies, the ASCSA, the Council for American Overseas Research Centers, the Fulbright Institute of International Education, and the Mellon Foundation. I am grateful for the support and encouragement of many scholars, in particular Susanne Bocher, Giorgos Dontas, Elizabeth Gebhard, Dominique Mulliez, Aenne Ohnesorg, Elena Partida, Robin Rhodes, Guy Sanders, Ernst Ludwig Schwandner, Reinhard Senff, and Nancy Winter.

FURTHER READING

The seminal work on Greek terracotta architectural decoration is Winter 1993. In addition, articles by Wikander (1988 and 1992) are useful for understanding the development and use of roof tiles. A more recent work on terracotta decoration is Aversa 2002. Furthermore, one can look to more localized studies of terracotta architectural members, such as at Isthmia (Gebhard 2001), Corinth (Rhodes 2003), and Mon Repos, Corfu (Sapirstein 2012).

REFERENCES

- Aversa, G. 2002. "Decorazioni architettoniche fittili di età arcaica tra Grecia propria e Occidente coloniale: Realtà a confronto." *ASAA* , 80: 231–279.
- Badie, A. and M.-F. Billot. 2003. "Terres cuites architecturales de la côte argienne du Golfe Saronique." In Konsolake-Giannopoulou, ed., 277–402.
- Barletta, B. 2001. *The Origins of the Greek Architectural Orders* . Cambridge.
- Bietak, M., ed. 2001. *Archaische Griechische Tempel und Ägypten* . Vienna.
- Billot, M.-F. 1990. "Terres cuites architecturales d'Argos et d'Epidaure. Notes de typologie et d'histoire." *Hesperia* , 59: 95–290.
- Broneer, O. 1971. *Isthmia I: Temple of Poseidon* . Princeton.
- Coulton, J.J. 1977. *Ancient Greek Architects at Work: Problems of Structure and Design* . Ithaca.
- Darcque, P. and R. Treuil, eds. 1990. *L'Habitat Egéen préhistorique* . Paris.

Gebhard, E.R. 2001. "The Archaic Temple at Isthmia: Techniques of Construction." In Bietak, ed., 41–62.

Gebhard, E.R. and F.P. Hemans. 1992. "University of Chicago Excavations at Isthmia, 1989: I." *Hesperia* , 61: 1–77.

Ginouvés, R. and R. Martin. 1985. *Dictionnaire méthodique de l'architecture Grecque et Romaine I: Matériaux, techniques de construction, techniques et forms du décor* . Athens.

Hampe, R. and A. Winter. 1965. *Bei Töpfern und Ziegeln in Süditalien, Sizilien, und Griechenland* . Mainz.

Heiden, J. 1995. *Die Tondächer von Olympia* . Olympische Forschungen 24. Berlin.

Hemans, F.P. 1989. "The Archaic Roof Tiles at Isthmia: A Re-examination." *Hesperia* , 58: 251–266.

Iakovides, S.E. 1990. "Mycenaean Roofs: Form and Construction." In Darcque and Treuil, eds., 147–160.

Kanellopoulou, G., ed. 1978. *Στήλη: τόμος εις μνήμην Νικολάου Κοντολέοντος*. Athens.

Konsolake-Giannopoulou, E., ed. 2003. *Αργοσαρωνικός: Πρακτικά Ιου Διεθνούς Συνεδρίου Ιστορίας και Αρχαιολογίας του Αργοσαρωνικού: Πόρος, 26–29 Ιουνίου 1998, Τόμος Β'* . Athens.

Le Roy, C. 1967. *Les Terres cuites architecturales: Fouilles de Delphes II. Topographie et architecture* . Paris.

Mallwitz, A., ed. 1999a. *Olympische Berichte XI: 1977–1981* . Berlin.

Mallwitz, A. 1999b. "Ergebnisse und Folgerungen: Brunnen und frühe Bauten." In Mallwitz, ed., 119–224.

Mazarakis Ainian, A. 1997. *From Rulers' Dwellings to Temples: Architecture, Religion and Society in Early Iron Age Greece, 1100–700 B.C.* Studies in Mediterranean Archaeology 121. Jonsered.

Mertens-Horn, M. 1988. *Die Löwenkopf-Wasserspeier des griechischen Westens im 6. und 5. Jahrhundert v. Chr. im Vergleich mit den Löwen des griechischen Mutterlandes. MDAI(A)* , Ergänzungsheft 28. Mainz.

Rhodes, R.F. 1987. "Early Corinthian Architecture and the Origins of the Doric Order." *AJA* , 91: 477–480.

Rhodes, R.F. 2003. "The Earliest Greek Architecture in Corinth and the

7th-century Temple on Temple Hill.” In Williams and Bookidis, eds., 85–94.

Robinson, H.S. 1976. “Excavations at Corinth: Temple Hill, 1968–1972.” *Hesperia* , 45: 203–239.

Salmon J.B. 1984. *Wealthy Corinth: A History of the City to 338 B.C.* Oxford.

Sapirstein, P. 2009. “How the Corinthian Manufactured Their First Roof Tiles.” *Hesperia* , 78: 195–229.

Sapirstein, P. 2012. “The Monumental Archaic Roof of the Temple to Hera at Mon Repos, Corfu.” *Hesperia* , 81 (1): 31–91.

Schattner, T.G. 1990. “Griechische Hausmodelle: Untersuchungen zur frühgriechischen Architektur.” *MDAI(A)* Beihefte 15. Berlin.

Schwandner, E.-L. 1985. *Der ältere Porostempel der Aphaia auf Aigina* . Berlin.

Schwandner, E.-L. 1990. “Überlegungen zur technischen Struktur und Formentwicklung archaischer Dachterrakotten.” *Hesperia* , 59: 291–300.

Skoog, V. 1998. “*The Laconian-Style Roof: Development, Distribution, and Technology.*” PhD dissertation, University of Missouri.

Wiencke, M.H. 2000. *Lerna IV.1: The Architecture, Stratification, and Pottery of Lerna III* . Princeton.

Wikander, Ö. 1988. “Ancient Roof-Tiles: Use and Function.” *OAth* , 17: 203–216.

Wikander, Ö. 1992. “Archaic Roof-Tiles: The First (?) Generation.” *OAth* , 19: 151–61.

Williams, C.K., II. 1978. “Demaratus and Early Corinthian Roofs.” In Kannellopoulou, ed., 345–350.

Williams, C.K., II and N. Bookidis, eds. 2003. *Corinth: The Centenary* . Corinth 20. Princeton.

Wilson Jones, M. 2014. *Origins of Classical Architecture: Temples, Orders and Gifts to the Gods in Ancient Greece* . New Haven.

Winter, N.A. 1993. *Greek Architectural Terracottas from the Prehistoric to the End of the Archaic Period* . Oxford.

Winter, N.A. 2009. *Symbols of Wealth and Power: Architectural*

Terracotta Decoration in Etruria and Central Italy, 640–510 B.C.
Memoirs of the American Academy in Rome Suppl. 9. Ann Arbor.

Yalouris, N. 1972. “Das Akroter des Heraions in Olympia.” *MDAI(A)* ,
87: 85–98.

CHAPTER 5

The Greek East: Temples and Engineering

John R. Senseney

Unprecedented and dangerous, the construction of Ionia's earliest colossal stone temples and the kilometer-long tunneling of Eupalinos' famous aqueduct through Mount Kastro on the island of Samos were ancient Greek equivalents of going to the moon and back. For the architect or engineer, the challenge involved reshaping the physical world for the sake of beauty and usefulness, and doing so under the pressure of high expectations with one's own legacy at stake. To boot, there was no native theoretical tradition to draw upon. Instead, architects harnessed will, ingenuity, and courage to make the best use of foreign experiences and distant precedents. Failures provided lessons, and successes called for a distinctively Ionian invention: the recording in prose of how builders executed such projects, resulting in the genesis of Greek architectural theory. As explored in a separate chapter (see [Chapter 16](#)), the resulting body of theory would contribute greatly to the Greek conceptualization of the art of building. The present chapter highlights the development and major achievements of temple construction and engineering in the Greek East, placing them against a larger intercultural background as a foundation for further exploration of the characteristically Greek interests in theory, scale, and design.

The Major Works

On Samos, the period witnessed before and during the reign of the tyrant Polykrates (538–522 BCE) transformed the physical environment in ways that protected and fortified the city and secured its water supply. Prior to the mid-sixth century, the island's namesake city (modern Pythagoreio) was open to the destructive powers of the sea, and nearby Mount Kastro stood as a formidable natural barrier to a potential source of fresh water in the countryside beyond. In addition, the waters of the Ibrasos River destabilized the ground in the sanctuary dedicated to Hera, devastating the recently completed temple upon which Samian aspirations to architectural glory hinged. The new works included a new breakwater that stretched approximately 400 m into the Samos Strait (Hdt. 3.60.3), providing a haven for ships and serving the city's sea defenses. More impressive yet, the famous

tunnel engineered by Eupalinos of Megara bore straight through the body of 237-meter-high Mount Kastro, allowing for an aqueduct carrying water from a distant source (Hdt. 3.60.1–3).

Another spectacular act of shaping the physical environment of Samos was achieved in overcoming the shakiest of marshy foundations at the sanctuary of Hera to initiate the largest temple in the Greek world as an expression of stability and monumentality. Polykrates' temple replaced the nearby "Rhoikos Temple" completed decades earlier, which was dismantled, likely because of unstable foundations in the marshy terrain of the sanctuary (Kyrieleis 1981: 73–78; Kienast 1992: 174–179). The new temple remained under construction through the Hellenistic period when the project went abandoned. As planned around 530 BCE, it was to be larger than its predecessor and the recently built "Kroisos Temple" at the Sanctuary of Artemis at Ephesos, as well as the contemporary temple at the oracular Sanctuary of Apollo at Didyma. Like these three buildings, Polykrates' Heraion represents the great Ionian tradition of the colossal *dipteros* (Hellner 2009), in which two colonnades surround a deep pronaos and cella on all sides (Figure 5.1 and Figure 5.2). In essence, this form was an elaboration and monumentalization of the basic peripteral type, itself possibly an Ionian invention; the earliest documented example is found at the Artemision at Ephesos, where an eighth-century precursor to the famous Kroisos Temple was a small tetrastyle hall with eight columns on the flanks, around which bases of green schist supported wooden shafts (Bammer 1990: 137–160; Bammer 1991: 73; Barletta 2001: 33).

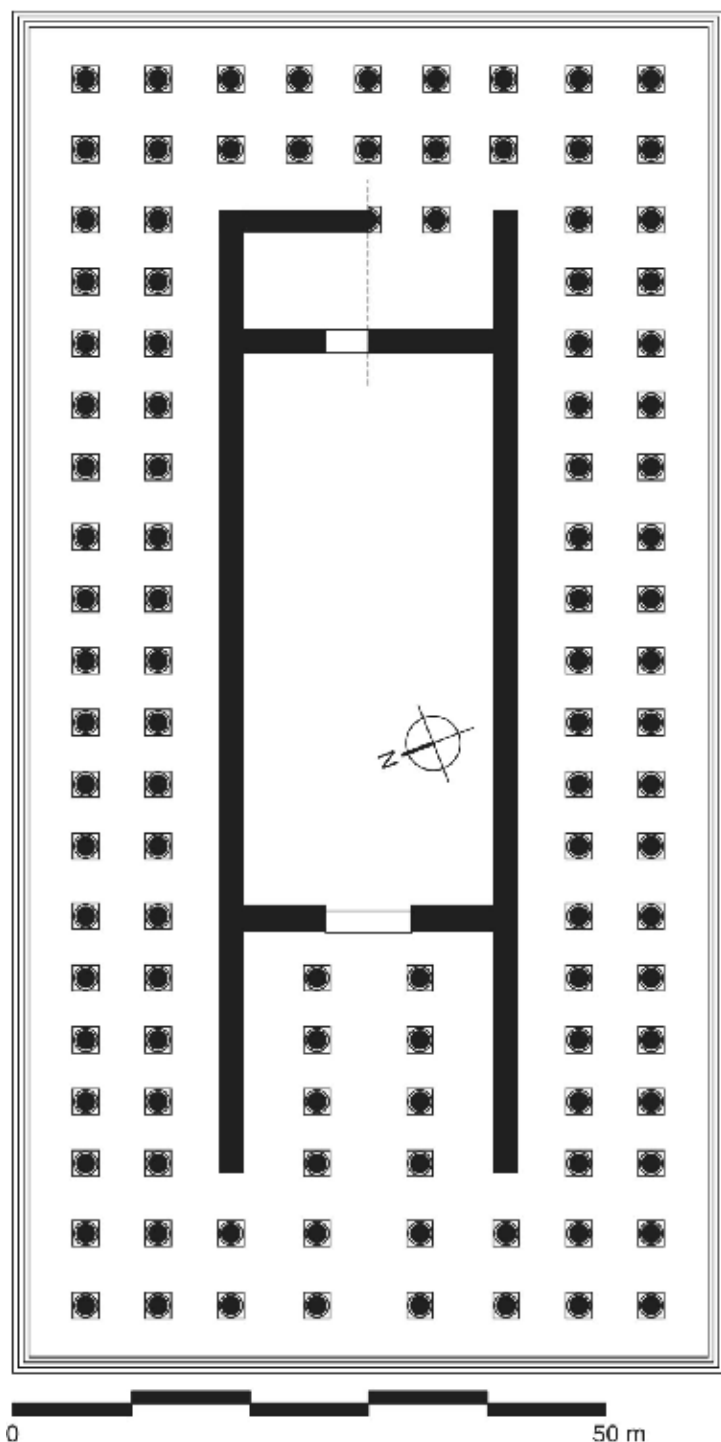


Figure 5.1 Archaic Temple of Artemis (“Kroisos Temple”) at Sardis, restored ground plan showing alternative reconstructions of adyton and opisthodomos in the east.

Owing to the destruction or significantly incomplete state of the Ionian dipteroi of the sixth century BCE, the imagined experience of their scale and form is perhaps best approximated through the well-preserved Didymaion (Figure 5.2 and Figure 5.3), which reached a relatively advanced stage of completion before its abandonment in Roman times. As at Ephesos, construction began anew in the Hellenistic period to replace a destroyed Archaic precursor, in this case a casualty of the Ionian revolt against the Persians in the 490s BCE. In the eighth or seventh century BCE, a small, rectilinear walled temenos containing an altar had been built (Drerup 1964: 333–368), and at the end of the seventh century a small stoa for sheltering visitors to the oracle was added to the immediate southwest (Naumann and Tuchelt 1963/1964: 15–62). Reflecting influences from the Rhoikos and Kroisos temples, around 540 BCE, construction began on a monumental octastyle dipteros (around 38×85 m) with a sacred interior courtyard or adyton open to the sky, which contained a small naiskos (Gruben 1963: 78–182). The original planning and construction of its replacement in the late fourth century were led by Paionios, who earlier had worked at the Ephesian Artemision, and by Daphnis from nearby Miletos (Vitr. *De arch.* 7.praef.16). This new building followed the general scheme of its Archaic precursor but at a larger scale, planned as a decastyle dipteros with 21 pairs of columns on the flanks. Along with the forest of partially preserved columns at the front, the three columns 20 m tall, still standing to their full elevation, give a sense of the original experience of the Archaic giants (Figure 5.3). In addition, details of ornament and finish such as the panel-strips of recessed bands across the lower edges of blocks along the steps leading up to the stylobate (Figure 5.4) and the elaborately carved plinths, spiras, and base moldings reflect characteristic features of Ionian temple architecture dating back to the sixth century BCE.

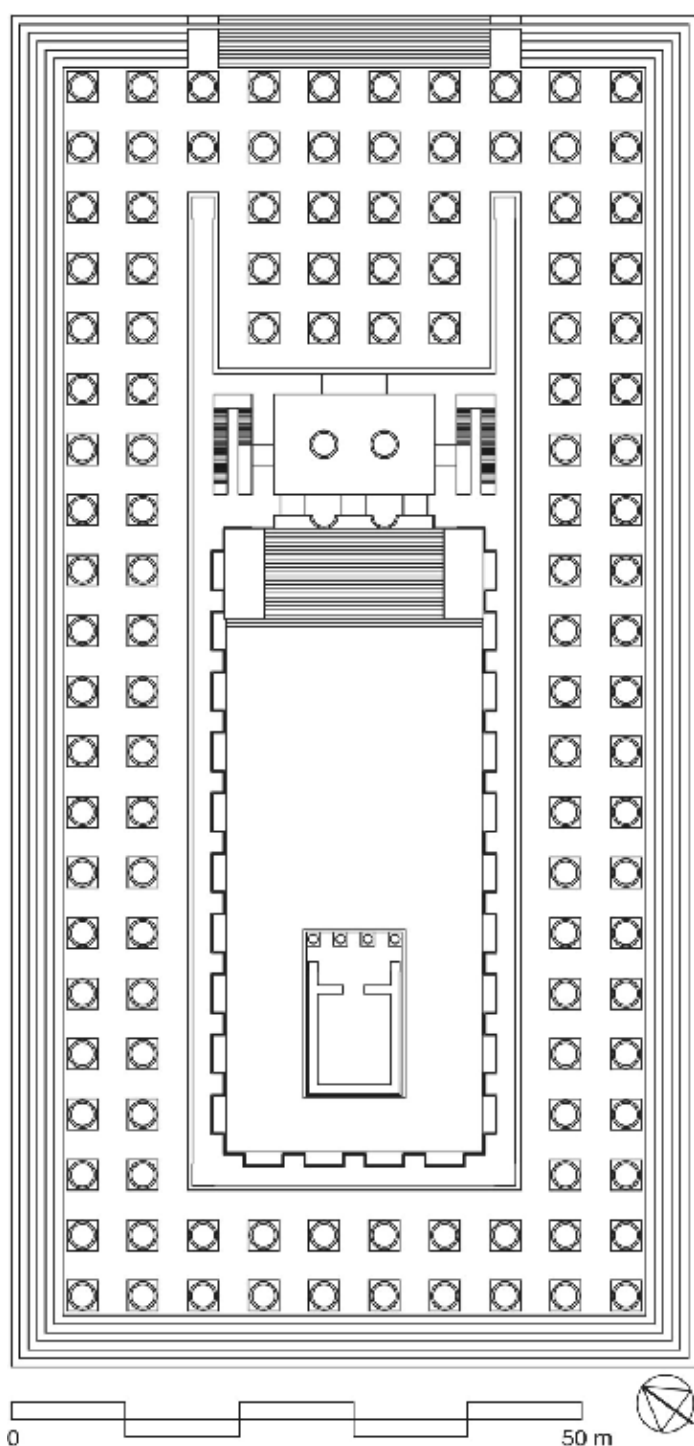


Figure 5.2 Sanctuary of Apollo, Didyma, Hellenistic–Roman period, restored ground plan including columns planned but never erected.

Source: J. Senseney.



Figure 5.3 Sanctuary of Apollo, Didyma, view from northeast.

Source: J. Senseney.



Figure 5.4 Sanctuary of Apollo, Didyma, view of frontal stairway ascending to stylobate, featuring panel-strips as found in the masonry of earlier Ionian

temples as well as Lydian buildings.

Source: J. Senseney.

Distinctively Ionian in its form and monumentality, the Didymaion preserves something of the culmination of a regional architectural tradition, much of whose beginnings may be traced to Samos. Already in the eighth and seventh centuries, Samos showed a tendency toward a new sense of monumentality that was to amplify in the sixth century. In the eighth century, a long, narrow, eastward-facing *hekatompedon* (“hundred-footer”) followed the appearance of a stone-built altar in the previous century (Coulton 1977: 31). It was constructed of mudbrick, with a row of timber uprights down the middle to support the roof, and was a large but simple structure without porch columns or a peristyle in the manner of later Greek temples. The central row of posts would have obscured the view of the cult statue at the rear of the interior. As a replacement in the second quarter of the seventh century, Hekatompedon 2 resolved this problem. Here, a similarly elongated building following the same orientation, featuring stone walls with an outer skin of small blocks laid in horizontal courses and with the interior supports located near the walls in order to create an uninterrupted view towards the cult statue (Coulton 1977: 32; Kyrieleis 1981: 79). Additional developments included a more monumental altar to replace that of the ninth century, a large temenos wall, and a stoa of timber and mudbrick. Despite these additions, the temple itself remained a simple affair, and there is no convincing evidence that it featured a peristyle of wooden columns in the manner of the tetrastyle temple of the previous century at Ephesos (Kienast 1996: 17–18; Barletta 2001: 32).

Replacing Hekatompedon 2 at Samos, the first of the great Ionian dipteroi was as influential as it was short lived. Begun around 570 BCE, this was the so-called Rhoikos Temple, the precursor to the temple built by Polykrates. Architects Theodoros and Rhoikos respectively led its planning and construction, and Theodoros wrote a commentary about their work. Built in limestone at least to the top of its columnar shafts, and with timber construction above, its scale was unprecedented, measuring some 52.5 × 105.0 m, and fronted by a new, axially placed, monumental limestone altar (approximately 16 × 35 m), in which a central stairway on the long side facing the temple ascended to a high sacrificial platform. At the front it was octastyle with wider central intercolumniations, decastyle in the rear, and there were 21 columns along the flanks. From the standpoint of mature Ionic forms as found in the Didymaion, the ornament of the Rhoikos Temple was a mixture of common and stillborn details. Common were the columns featuring spiras and torus moldings finished with horizontal bands (Johannes 1937: 13–37). On the other hand, the shafts featured 40 flutes with sharp arrises rather than the later standard of 24 with flat fillets, and the capitals consisted of just an echinus and abacus with no surviving evidence for volutes (Walter 1990: 121–129; Hendrich 2007). Although canonical for the Greek East in its colossal scale,

dipteral arrangement, and some other features, as a limestone building exhibiting experimental moldings and surface articulation, the Rhoikos Temple was transitional. In order to more fully explore the innovations and intercultural context underlying the reshaping of the environment in Archaic Ionia, the following discussions will focus on the all-marble, truly Ionic Artemision at Ephesos and the Tunnel of Eupalinos at Samos.

The Kroisos Temple

While no later Greek feat of engineering was to rival Eupalinos' tunnel, over the centuries the Archaic temples of the Greek East became objects of emulation, with examples like the Hellenistic-Roman Didymaion elaborating upon their basic forms. The sixth-century Ionian development of the octastyle dipteros established the characteristic image of monumental sacred architecture in the Ionic order. Indeed, one of the hallmarks of Ionic influence in the Doric temple architecture of the Parthenon is its octastyle arrangement, a traditional organization that sets off the novel expansion of the cella to occupy the maximum width in plan while eliminating the inner colonnades on the flanks (Korres 1994: 84–86). Beyond such formal aspects, perhaps the most far-reaching contributions of the architects of the Archaic temples of Ionia were their achievements in the realm of engineering. Their innovations in the construction of foundations and the transporting, lifting, and load-and-support of heavy stone involved great innovation on the part of their architects, allowing later architects to learn from their examples and free themselves to focus more of their own innovations on questions of design.

The most complete evidence for such engineering pertains to the truly gigantic Kroisos Temple at Ephesos, which was one of the seven wonders of the ancient world ([Figure 5.1](#)). Mostly completed in circa 560–550 BCE, tragically in 356 it was destroyed by an arsonist seeking immortal fame through his act, leaving it abandoned until a Hellenistic successor could be built. Like the Rhoikos Temple, it is restored as a colossal dipteros with eight columns along the front, featuring varying intercolumnar spacing that was widest at the center, and with nine columns along the back. According to the latest excavations, it measured around 60 × 115 m. In addition to being the largest Greek building to date, it had the distinction of being the earliest all-marble structure on such a large scale (much smaller marble temples already existed), and it was the first Ionian temple known with certainty to have been built in what we commonly recognize as the Ionic order. In its scale, materials, finishing, and ornament, it was to influence the Polykratan Heraion and the Archaic Didymaion, both begun in subsequent decades. Inscriptions in Greek and Lydian on the column bases indicate a dedication by the Lydian king Kroisos (circa 560–546 BCE), confirming Herodotus' statement (1.92)

that Kroisos donated most of the columns for the Artemision (Hanfmann 1975: 10–11). The architects were Chersiphron and Metagenes, a father and son team from Knossos, Crete (Vitr. *De arch.* 7.praef.16, 10.2.12). As at Samos, the construction was to take place on a marshy ground, so Theodoros, one of the architects of the Rhoikos Temple at Samos, came to Ephesos to advise on the foundations. Theodoros' involvement may have helped to influence the kindred form of the Artemision in plan, and it may also have had something to do with Chersiphron and Metagenes' decision to publish a commentary about their work in the manner of their Samian collaborator.

Though the commentary of Chersiphron and Metagenes is lost to us, it seems to have focused on solutions to technical challenges like the transport and lifting of heavy blocks of marble, which would have been impressive feats of engineering worthy of fame. The emphasis on design associated with Vitruvius and his main Ionian sources was a later development in the architectural writing of the late Classical and Hellenistic periods. The mastery of more fundamental problems was required first, often through perilous trial-and-error, in which it is the achievements, rather than the setbacks, that were recorded. Following the extraction and rough shaping of stone, transport to the building site involved the same kind of technology used in siege engines, since the means were essentially axle-and-wheel vehicles with special attention to load support, road conditions, and directional control. In overcoming the challenges involved with these three concerns separating the quarry from the building site, architects like Chersiphron and Metagenes effectively readied a transformation of nearby, natural stone deposits into an architectural vision of structure, monumentality, and order. According to Vitruvius, Chersiphron had reason to distrust the sturdiness of the road surfaces from quarry to site, and he was concerned about the capacity of usual vehicles to support such heavy loads as marble column shafts (10.2.11). Ingeniously, therefore, he made the load itself the means by which it was carried, using the shafts as solid stone rollers around which a frame of four timber planks parallel to the ground were attached with pivots. In this way, teams of oxen securely pulled each rounded shaft from quarry to site. When later transporting the square-edged architrave blocks, Metagenes similarly conceived of these as sturdy axles, to which wooden wheels were attached with pivots (Vitr. *De arch.* 10.2.12).

Ancient testimony for how these architects positioned the architrave blocks on top of the columns may point to non-Greek influences. According to Pliny, Chersiphron lifted the blocks into place by dragging them up a ramp of sandbags, and then gradually let the sand out of the lower bags so that the blocks could settle into place (*HN* 36.21.96–97). Pliny's account is obviously late, but his use of earlier sources is likely. Furthermore, the system he describes is feasible, since the architrave blocks of such monumental buildings probably exceeded the lifting capacity of cranes, which appear not

to have been in use in Greek architecture until the late sixth century BCE. Later building projects were usually not as colossal and therefore more appropriate for these machines. In addition, to some extent Assyrian and, more commonly, Egyptian building projects had traditionally used temporary earthen ramps to lift heavy building materials into place, suggesting a probable model for the practice (Coulton 1977: 144). Regarding how such technologies may have reached Ephesos, it has been hypothesized that the neighboring Lydians, who funded and worked on the Artemision, may have served as intermediaries between Near Eastern traditions and East Greek temple building projects (Ratté 1993: 1–12). In order to better assess this question of Near Eastern and Lydian influence, later in this chapter I consider the interrelation of engineering and other architectural issues within a careful reexamination of the question of intercultural exchange.

The Tunnel of Eupalinos

Just as an incipient striving toward monumental form in Ionian temple architecture had taken place in the seventh century at Samos with Hekatompedon 1 and 2, in hydraulic engineering, Eupalinos' achievement was preceded by an earlier Samian project to alter a natural course of water. In the wet environment of the Heraion at the close of the seventh century, the diversion of a tributary of the Imbrasos River enabled the construction of the Sacred Way, which provided the first connection between the sanctuary and the town by land rather than by sea (Pedley 2006: 158). In a similar way decades later, in the service of Kroisos, the famous Ionian polymath Thales of Miletos bifurcated the course of the River Halys, reducing its depth to allow the Lydian king's army to ford it in his march against Cyrus the Great (Hdt. 1.75.3–6).

A possible background for these feats may be sought in Egypt, where irrigation works were of prime importance going back to the earliest days of its civilization. As early as the Old Kingdom, local administrative districts traditionally undertook hydraulic engineering projects (Hassan 1997: 55–56). In the time of strong Ionian presence in Egypt, however, the central authority of the Saite king Necho II (610–595 BCE) began construction on a canal to link the Nile with the Red Sea (finished later under the Persians), initiating an ancient precursor to the Suez Canal that makes the Greek manipulation of the Imbrasos and the Halys seem insignificant by comparison (Redmount 1995: 127–135). In at least a general way, on the other hand, the coeval pharaonic marshaling of resources capable of such a visionary transformation set the precedent for the kind of scale of achievement that a sixth-century Greek tyrant like Polykrates might conceive of.

In the aqueduct tunneled through Mount Kastro, Samos boasts one of the

greatest successes of engineering in the entirety of the ancient world (Figure 5.5). The purpose was to pipe in water from a spring located beyond the north side of the mountain, and therefore on the inland side opposite from the city. The water traveled from the spring in a conduit below ground level until it reached the tunnel's point of entry at the northern base of the mountain, after which it was conducted through the mountain to the city in a way that would have remained concealed from potential enemies. Along with the Rhoikos Temple and Polykrates' harbor, Herodotus names the tunnel as one of the three highest achievements of all the Greeks (3.60.1–3). He identifies Eupalinos of Megara as the master artificer (ἀρκιτέκτων), the same term used for the architects of temples. Consistent with his description of the tunnel, it is 1036 m long and carries ceramic water pipes inserted into a channel excavated into the east wall. The tunnel itself is intended to accommodate workers for purposes of maintenance and repair, and is therefore of a comfortable though varying height and width, both of which are at least 1.5 m throughout. For the channel carrying the water pipes, some sections were excavated and then refilled after the pipes were installed, while in other sections it was tunneled underneath the walking surface of the larger tunnel. Although the tunnel is nearly level, the channel slopes at a gradient of 0.5 percent, beginning at the north entry at a depth of 3.38 m below the level of the tunnel floor, and ending at a depth of 8.50 m at the south exit; horizontal lines painted on the east wall throughout the tunnel aided in controlling the gradual incline of the channel (Kienast 1995: 161–163). Near both mouths, the entrances to the tunnel are approached from above by steep staircases.

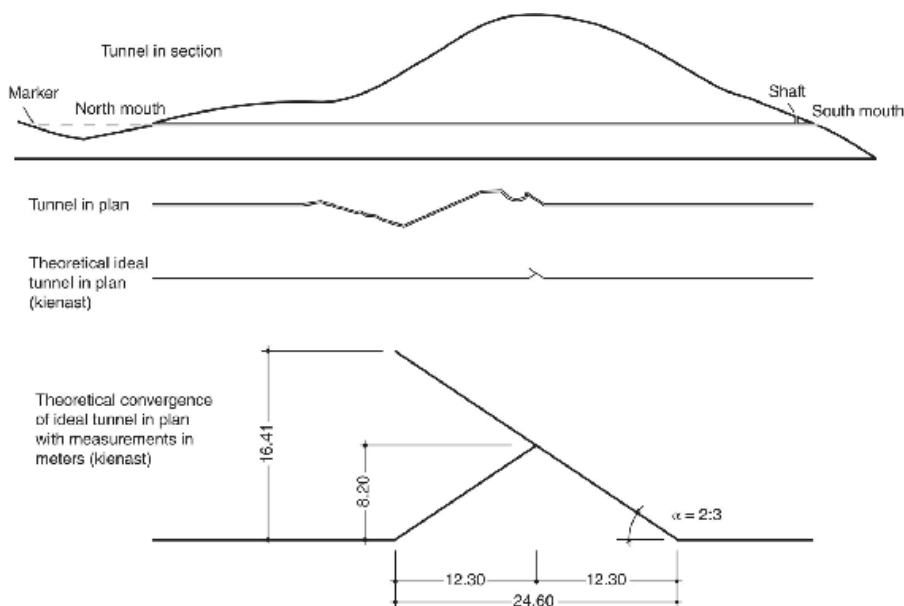


Figure 5.5 Tunnel of Eupalinos, Samos, showing tunnel in section, plan, and theoretical ideal plan with a detail of this ideal plan's convergence, according

to Kienast.

Source: J. Senseney, adapted from Kienast 1995: fig. 46a, foldout plans 3a and 3b.

Excavated simultaneously from the north and south sides of Mount Kastro, the two tunnels met inside the mountain. Driving tunnel heads from opposite sides had the advantage doubling the speed of the operation, allowing twice as many workers to excavate in the narrow confines at the same time. Still, this process of tunneling is estimated to have taken at least eight years to complete (Kienast 1995: 189). Given that the tunneling took place from both mouths separated by a mountaintop ridge rising 170 m overhead, the near exactness of its leveling is impressive, with a difference of only 4 cm between the two ends.

In carrying out this achievement under the limitations of preindustrial technology, will and persistence in slow and dangerous excavation were matched by ingenuity and control in planning and oversight. Driving two long tunnels through opposites sides of a mountain and ensuring their convergence required precise leveling and alignment at the start, and control over leveling and alignment as workers gradually drove the heads of the two tunnels through the earth. How this was achieved is a matter of debate. One possibility is that Eupalinos employed the method of surveying for counter-excavated tunnels as later described by Heron of Alexandria in [chapter 15](#) of his *Dioptra* of the first century CE, a commentary on the construction and functions of a surveying instrument of the same name. As discussed below, Eupalinos might have used a simpler precursor to the *dioptra* for sighting. In addition, he may have preceded Heron in the method of calculating the length of the tunnel's trajectory as the hypotenuse of a right triangle in the manner of the Pythagorean theorem (Van der Waerden 1954: 102–105; Burns 1971: 178–182), though such a hypothesis is unlikely (Kienast 1995: 196–201; Grewe 1998: 22; Lewis 2001: 202, 227). Alternatively, Eupalinos may have staked out a line of poles directly over the mountain between the tunnel mouths and measured the level distances between them in a sequence of theoretical straight lines above the inclined and irregular terrain (Kienast 1995: 129–139). Since it would be impossible to excavate perfectly straight tunnels, Hermann Kienast argues that, having obtained the correct distance of the straight line through the mountain, Eupalinos ensured the meeting of the north and south tunnels based on an ideal geometric plan ([Figure 5.5](#)). In this plan, immediately before the established point of convergence, both tunnels were to deviate in the same eastward direction in order to meet at a prescribed angle (Kienast 1995: 164–172). This interpretation identifies the south tunnel as following the ideal plan for the most part, whereas the north tunnel encountered difficulties with underground water and solidity in the bedrock that necessitated the improvised zigzag observable north of the point of convergence.

As opposed to an ideal plan that would have required an exact determination

of the tunnel's projected length, a more intuitive method relying on a basic principle and a multistage strategy offers a straightforward explanation for Eupalinos' achievement. Any possible problems encountered underground on the north half of the mountain would have coincided with the opportunity to begin a zigzag as a precaution to avoid the tunnel heads passing by one another. Intended to begin at some point in the process, such a precaution meant that an accurate measurement of the theoretical trajectory through the mountain was unnecessary. Provided that the excavation of the tunnels began in alignment and at the same level, all that was needed was a simple principle to be followed in excavating the south tunnel: as long as the distant natural light at the shaft remained directly visible, even if only partially, the maximum divergence at any given point was limited to the approximate width of the tunnel. This principle would ensure enough accuracy for adjustments of direction in the north tunnel as the two heads approached their point of convergence. In turn, these maneuvers would successively eliminate possibilities for the undetermined relative locations of the heads at any point in the process. Vital to this strategy, it was first necessary to locate the southern and northern mouths along the same level, which involved proper surveying at a very early date in the Greek history of that art. Secondly, in the long and arduous process of excavation, Eupalinos had to stick to his principle of maximum divergence to control the level and alignment.

Proper instrumentation for these tasks was key. Despite absent testimony, the kinds of instrument that Eupalinos used may be deduced. In an astronomical experiment described in the first theorem of Euclid's *Phenomena* of around 300 BCE, the famous mathematician refers to the dioptra later discussed by Heron, an instrument that helps Euclid to demonstrate the earth's central location in the universe (Senseney 2011: 60–62). The dioptra was a sighting tube that, in its fully developed Hellenistic form, fastened to a disk that pivoted at its center and was adjustable to be used in horizontal as well as vertical modes, allowing for leveling, fixing of angles along a plane parallel to the ground, and measurements of altitude (see [Figure 16.2](#)). This sophisticated and versatile instrument must have evolved from a simpler sort of sighting tube (Lewis 2001: 61–68). As M.J.T. Lewis proposes, the earlier version may have developed first in the Near East before its introduction to the Archaic Greek world, and its simpler form arguably survived in the Near East as the instrument used for leveling in tunnels, which the Persian engineer al-Karaji described in the tenth century CE as a horizontal brass sighting tube suspended at both ends by equal lengths of a light iron chain to maintain its level (Lewis 2001: 214–216). With this device, Eupalinos and his workers would have been able to sight around the western slope of Mount Kastro, arriving at the same level for the tunnel mouths on the southern and northern sides. To establish the alignment, they likely sighted directly over the mountain to mark a straight line, not necessarily with regard for measurement.

Having established the level and the alignment of the north and south mouths, the next task was to maintain their accuracy during the excavation process. To do so, the same sighting tube would have provided the best means of leveling and alignment through sighting backwards from the tunnel head toward the mouth. A consistently level tunnel would help to facilitate a relatively smooth gradient for the sloping channel to carry the water pipes. Along with this consistent horizontal level, directional alignment was essential to a successful convergence of the north and south tunnel heads. How this was achieved is conjectural, and much of the following account departs from previous hypotheses in its details.

To control alignment, sighting toward two markers along a theoretical straight line at a sufficient distance from one another would project that line across the intervening void into the properly aimed, suspended tube. This control was most critical at the earliest stages of driving the tunnel heads into the mountain, when the precise direction of excavation needed to be set. On the north end at this early juncture in the project, workers could place a marker at the mouth, with the second likely to have been placed at the appropriate level on the conveniently located rise across the valley (Figure 5.5). On the south end, in the direction of the town, there was no such available rise, necessitating the construction of a shaft on this end, able to illuminate a marker aligning with a second marker at the mouth. In this way, the earliest part of the excavation could serve as a model for the ongoing process, in the same manner later found in the lining of the northern part of the tunnel with ashlar and a pointed vault, creating a dromos; here, the famous inscription of the word *paradeigma*, or “model,” seems to have signified the established direction for the remaining lining yet to be built (see Wesenberg 2007). Once excavation had progressed along a sufficient distance, the entire tunnel behind effectively became a monumental sighting tube, so that alignment was secured as long as the far-off light of the outer world remained at least partially in direct view. At this point, Eupalinos could proceed according to the principle of maximum divergence described above.

As Eupalinos certainly knew, the sound from metal tools crashing against rock could provide a rough gauge for direction and distance as the two tunnel heads approached their anticipated convergence. He could operate according to a simple strategy of acoustic location made possible by the advantage of solid matter (as opposed to air) in transmitting sound waves over extensive distances. The efficacy of this strategy would be limited to areas within the mountain wherein vibrations were not broken up by intervening pockets of softer soils, and therefore could not be guaranteed. Where possible, vibrations from the blows of metal tools in one tunnel could reach a distant listener with an ear pressed against the face or flank of the other tunnel. Direction could be gauged based on diffraction, wherein sound waves diminish around obstacles like corners. In this way, the relative eastward or westward direction of an

opposing tunnel head was indicated by the relative strength of the auditory signal tested along the eastern and western flanks. First, however, Eupalinos would need a plan accounting for various contingencies that would bring the tunnel heads into close enough proximity to permit the reception of such signals, and limit the amount of possible overshooting should the north and south tunnel heads eventually pass one another altogether.

One may reconstruct Eupalinos' precautionary, multistage plan required to contend with successive possibilities (Figure 5.6). His general strategy would be to drive the south tunnel head as far and straight as possible, while maneuvering the north tunnel head to trap and converge upon its south counterpart. In Stage 1 of this approach, he initiated the north tunnel's zigzag by veering its head to the west, painting marks on the wall to keep track of the distance along this diversion in order to drive the north tunnel head safely past the point of the south tunnel's maximum possible divergence. He then turned his crew back in the opposite direction, steering them past the point of the original straight projection, and – very importantly – continuing to a point that was beyond the maximum eastward divergence of the south tunnel. This zigzag limited the amount of possible overshooting, effectively trapping the south tunnel head's forward progress along a collision course with one of the diagonals of the north tunnel. In aiming for the fastest (and therefore least expensive) convergence, two possibilities remained: that the head of the south tunnel was already overshot to the north and slightly westward of the head the north tunnel or – as was actually the case – that the south tunnel head was still to the south. In order to account for both possibilities, in stage 2 he drove the north tunnel forward while turning the south tunnel head eastward along a distance necessary either to converge with the western flank of the north tunnel, or to bring it to an eastward point approximating the current location of the north tunnel head. When no convergence took place, in Stage 3 he began to drive both tunnels at one another head-on when, suddenly, the crashing tools of the two groups became audible, allowing Eupalinos to determine that the head of south tunnel stood slightly to the west of that of the north tunnel.

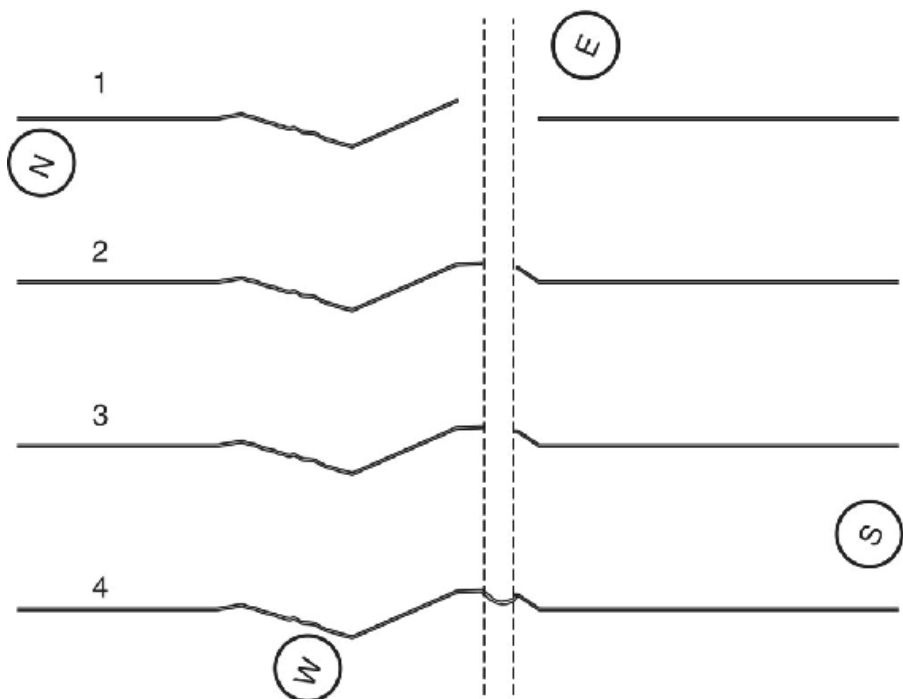


Figure 5.6 Tunnel of Eupalinos, Samos, proposed multistage process of excavation, with dotted lines indicating the north–south positions of the tunnel heads before the final maneuver toward convergence in stage 4.

Source: J. Senseney, adapted from Kienast 1995: foldout plans 3a and 3b.

After years of tunneling, one final maneuver was needed in the fourth and final stage. At this point, from time to time it would have been useful to position shouters along audible distances within the tunnels and over or around the mountain surface to relay communications between the two groups of excavators deep inside the mountain. After turning the north tunnel head along a short distance westward, sound tests would have confirmed that the south tunnel head was now to the immediate east of that of the north tunnel, giving a precise idea of where the two heads stood in relation to one another. Eupalinos therefore drove the north tunnel head forward and eastward, smashing through the western flank of the south tunnel just a meter behind its head, and with its floor at a level some 60 cm above that of the south tunnel. Undoubtedly, celebration began on the spot.

Intercultural Context

The Archaic era successes at Samos and Ephesos are as inseparable from one another as they are from broader achievements in the ancient Mediterranean

world. The case for Egyptian influence on Ionian temples, including that of the living traditions of the Saite building program, is well established (Coulton 1977: 34, 35), and I considered aspects of the possible Egyptian background to Eupalinos' tunnel above. This final section addresses questions of possible Near Eastern and Lydian influences on the materials and techniques of temples and engineering in the Greek East.

Beyond Egypt, other environs in the eastern Mediterranean carry strong relevance for the question of how builders in the Greek East learned to shape their world. Construction with heavy, quality ashlar akin to those of Ionian temples makes an appearance in the ninth century BCE at Samaria in the Kingdom of Israel. In the seventh century BCE, similar masonry appears in Assyria, particularly in a set of monuments belonging to the reign of King Sennacherib (705–681 BCE). This use of monumental ashlar therefore appears in an ancient architectural culture with a longstanding preference for brick (Boardman 2000: 31). One hypothesis as to the source of this important Mesopotamian development is, again, Israel (Ratté 2011: 60), which would make for an appropriate source in light of the fall of Samaria that resulted in Assyrian control in the reign of Shalmaneser V (727–722 BCE), provided that the older traditions still had currency. Whatever its direct origins, the appearance of such masonry in Assyria as the center of power carried new potential for dissemination to outlying areas southward in Babylon and, more significantly for the Ionian question, northward in the kingdom of Lydia and its neighboring Greek city-states in western Anatolia.

In this period, the question of the interrelationship of Ionian temple building with Lydian and Near Eastern architecture is vexed. During the Mermnad dynasty (circa 700–546 BCE), the Lydian kingdom came to occupy the entire Anatolian plateau to the border of the Persian Empire along the River Halys and was located to the immediate west of Ionia. From the seventh century to the defeat of the Kroisos at the hands of the Persians shortly after the mid-sixth century, Greeks throughout the Aegean viewed the Lydian court as a model of sophistication, luxury, and martial prowess, with Lydian adornments, weaponry, and courtly rituals held in the highest regard (Gunter 2009: 55–56). The last of the Mermnad kings were patrons of temple architecture in East Greece, with Alyattes (around 610–560 BCE) supposedly donating two temples of Athena at Assessos in Caria (Hdt. 1.19, 1.22) and, more significantly, Kroisos' gift of the columns of the Ephesian Artemision, leading to the hypothesis of his additional funding and supply of craftsmen in the other major temple projects of Ionia (Boardman 2000: 37). In the environs of the Lydian capital of Sardis, several structures featuring monumental ashlar construction reflect the same tools and clamps as are familiar in Greek masonry, finely pecked rusticated blocks with drafted margins, banded joints similar to Greek anathyrosis, and the kind of panel-strips of recessed bands across the lower edges of blocks found at the Didymaion (Figure 5.4) and its

Archaic precursors (Boardman 2000: 21, 33–34; Ratté 2011: 3–9, 17–20, 23–45). In addition, on the basis of architectural fragments and two small-scale marble shrine models, it is hypothesized that Kroisos may have built at Sardis the same kind of monumental, columnar building of the Ionic order for the Temple of Cybele/Artemis that he aided at Ephesos, and thus a local precursor for the Hellenistic-Roman Artemision at Sardis (Hanfmann and Ramage 1978: 42–51; Boardman 2000: 37–39). Based on the features inherited from previous Near Eastern practices and shared in Lydian and Ionian architecture, one view acknowledges the odd Greek influence (panel-strips) but points to wealthy and powerful Lydia as the originating party in this exchange (Boardman 2000: 35). An opposing view posits the possible Lydian contribution of construction technology to Ionian builders (Ratté 1993: 1–12), but deciding factors ultimately settle on the architectural heritage, Near Eastern contacts, and cultural adaptations that were greater, more widespread, and more embedded in Ionia. Accordingly, monumental Lydian stone-built architecture would have derived from the Greeks, and not the other way around (Ratté 2011: 61).

The answer to the question of Greek versus Lydian primacy in the creation of the great Archaic temples of Ionia may be sought along a different line of reasoning. The seventh and sixth centuries BCE were a time of foundational changes in the eastern Mediterranean, resulting from internal political turmoil, military upheavals, and wills to express power or alliance among new contenders for hegemony. Following weakening by civil wars, the fall of the Neo-Assyrian Empire in 605 BCE left uncertainties that would eventually be resolved by the conquests of Cyrus the Great, but it is worth emphasizing that even in the early 540s not even Kroisos foresaw this Persian domination. Instead, the monumental Ionian temples arose in a world in which Assyrian influences still had their continuing effects in terms of valued objects of exchange, an internationalized workforce of craftsmen, and general models for relationships among neighboring political entities.

With respect to Greek art of the “Orientalizing” period of the seventh century BCE, Ann Gunter (2009) challenges problematic traditional scholarly categories like “Greece” versus “Orient,” embracing instead the Neo-Assyrian Empire as a framework for understanding cross-cultural exchanges. Following two centuries of conquest and subjugation, in the seventh century, Assyrian kings ruled over an empire stretching from the Persian Gulf to Egypt. The empire included lands annexed by the kings, vassal states, and allies like the Lydians. In the interests of Assyrianization, an active policy of mass deportation relocated subjects, builders, and artisans of all cultural backgrounds in the service of imperial building projects (Gunter 2009: 28–29, 160–164, 170). At the dawn of the sixth century in the Mediterranean, then, fluidity and indistinct origins characterized technologies, styles, and skilled workers. In light of the Assyrian model, for Ionian and Lydian rulers, patrons,

and architects (like artisans, a notably transitory class) wishing to glorify their own names and polities, a modern opposition like “Greek” versus “Lydian” probably would have made for meaningless and imperceptible distinctions in the realm of artisans, styles, tools, and techniques. The demonstrated synchronic appearance, common features, and shared funding of monumental ashlar buildings in Ionia and Lydia points instead to communal innovation based on the elusive but doubtless differing – even conflicting – motivations of various political authorities, designers, engineers, and laborers.

The dissemination of luxury objects propelled by the mechanisms of Neo-Assyrian exchange relates to the incorporation of one of the most conspicuous features of the gigantic temples of the Greek East: the mature expression of the Ionic order in marble. Still transitional in the Samian Heraion of Rhoikos and Theodoros, the crystallization of the Ionic order at Ephesos would prove influential for monumental projects across various regions and eras. As reflected in Neo-Assyrian reliefs, the models for Ionic moldings, including the volutes of capitals, were to be found in the details of ivory furniture common in the Levant and Mesopotamia, which in the eighth and seventh centuries were distributed and redistributed freely throughout the Mediterranean in the form of tribute, booty, and gifts (Gunter 2009: 132–133, 171–177). It is, perhaps, appropriate that this creative sculptural exploration in marble took place in the Cyclades (Gruben 1997: 261–416; Barletta 2001: 85–90, 97–121), where Bronze Age sculptors had used such aesthetic sensitivity in exploiting the visual and tactile potential of native marbles in their plastic expressions of transition and tension in abstract form (Porter 2011: 426–429). Made possible by the Ionian technology of building, the incorporation of this Cycladic decorative system into the gigantic dipteroi resulted in expressions wherein the basic familiarity of ornament intensified the experience of its magnified scale, impacting visitors with strong impressions and establishing models of monumental sacred form to be emulated for centuries to come.

The same larger Mediterranean background may be significant for Eupalinos’ tunnel. The traditions of Mesopotamian hydraulic engineering were millennial, and there were relevant recent Neo-Assyrian precedents, such as the aqueduct of Sennacherib, built at Jerwan to supply Nineveh (Kuhrt 1995: 536; Boardman 2000: 31; Giovino 2007: 101). Perhaps the most significant precedent is the Siloam Tunnel of King Hezekiah (727–698 BCE) at Jerusalem, an aqueduct 533 m long with a 0.6 percent gradient tunneled into subterranean rock to supply the city in the event of a feared Assyrian siege (Parker 1997: 36–42; Grewe 2008: 324; Murphy-O’Connor 2008: 127–128). According to a contemporary inscription found within the tunnel, two teams excavated the tunnel simultaneously from both ends, meeting in the middle in the manner as later found at Samos. Such an example fits in neatly with the tradition of the *qanat*, a kind of hydraulic tunnel in Iran excavated with techniques that were common in the Neo-Assyrian world by the eighth

century BCE (Wilson 2008: 286–293) and later in Egypt, to which it was introduced by conquering Assyrians in the following century (Lewis 2001: 198–199). It was perhaps in this Neo-Assyrian context that the sighting tube that later evolved into the dioptra was first used, providing both the idea of the hydraulic tunnel as found at Samos and the instrument likely to have been employed by Eupalinos for leveling and alignment (Lewis 2001: 214–216). As in Archaic Ionian temple architecture, the tunnel of Eupalinos is perhaps best understood against the larger context of fluid intercultural knowledge and traditions made possible by the tensions and shared achievements of the recently dissolved Neo-Assyrian world, but created at a larger scale with great skill and innovation.

The wider east Mediterranean context offers a framework for existing tools, techniques, materials, and forms that aided the development of temples and engineering in the Greek East. Yet the relevance of this context obviously pertains to beginnings, and not to the new directions in which builders were to take their borrowed ideas. As an instrument for vision directed along a single straight trajectory, the original application of the sighting tube in the leveling and alignment of tunnels was to expand into wider uses, combining with geometry to help form new ways of understanding and representing the environment graphically through manipulations of scale. In the continuing development of theoretical writing that was to remain a characteristic feature of temple building in the Greek East in the Hellenistic period, this quality of scale was to result in far-reaching consequences for design, and not just engineering and building technology (see [Chapter 16](#)).

FURTHER READING

For Archaic temples at Samos, Ephesos, and Didyma Ohnesorg 2007 is to be noted for its up-to-date information, extensive illustrations, and informative tables related to the most recent excavations of the Archaic Artemision at Ephesos. An overview of the development, cultic functions, and international context of the Heraion at Samos is found in Pedley 2006, which also contains further bibliography. Coulton 1977 provides excellent summaries of the Archaic temples of Ionia and the innovations of the architects who built them, both their building techniques and writings. A more recent assessment of these architects and their influences is found in Senseney 2011. For questions of the relationship between the Ionian temples and Lydian architecture, Ratté 2011 is indispensable. An excellent study for questions of surveying in the making of Eupalinos' tunnel at Samos is Lewis 2001, which contains relevant comparative material from the larger ancient world. The most extensive study of the tunnel is Kienast 1995.

REFERENCES

- Bammer, A. 1990. "A *Peripteros* of the Geometric Period in the Artemision of Ephesos." *AS* , 40: 137–160.
- Bammer, A. 1991. "Les Sanctuaires des VIIIe et VIIe siècles à l'Artémision d'Éphèse." *RA* , 1: 63–84.
- Barletta, B. 2001. *The Origins of the Greek Architectural Orders* . New York.
- Boardman, J. 2000. *Persia and the West: An Archaeological Investigation of the Genesis of Achaemenid Art* . London.
- Burns, A. 1971. "The Tunnel of Eupalinus and the Tunnel Problem of Hero of Alexandria." *Isis* , 62: 172–185.
- Coulton, J.J. 1977. *Ancient Greek Architects at Work: Problems of Structure and Design* . Ithaca.
- des Courtils, J. and J-Ch. Moretti, eds. *Les Grands ateliers d'architecture dans le monde égeen du VIème siècle av. J.-C* . Varia Anatolica 3. Paris.
- Drerup, H. 1964. "Bericht über die Ausgrabungen in Didyma, 1962." *AA* , 333–368.
- Giovino, M. 2007. *The Assyrian Sacred Tree: A History of Interpretations* . Göttingen.
- Grewe, K. 1998. *Licht am Ende des Tunnels: Planung und Trassierung im antiken Tunnelbau* . Mainz.
- Grewe, K. 2008. "Tunnels and Canals." In Oleson, ed., 319–336.
- Gruben, G. 1963. "Das archaische Didymaion." *JDAI* , 78: 78–182.
- Gruben, G. 1997. "Naxos und Delos: Studien zur archaischen Architektur des Kykladen." *JDAI* , 112: 261–416.
- Gunter, A. 2009. *Greek Art and the Orient* . New York.
- Hanfmann, G.M.A. 1975. *From Croesos to Constantine: The Cities of Western Asia Minor and Their Arts in Greek and Roman Times* . Ann Arbor.
- Hanfmann, G.M.A. and N.H. Ramage. 1978. *Sculpture from Sardis* . Cambridge, MA.
- Hassan, F. 1997. "The Dynamics of a Riverine Civilization: A

Geoarchaeological Perspective on the Nile Valley, Egypt.” *World Archaeology* , 29: 51–74.

Hellner, N. 2009. *Die Säulenbasen des zweiten Dipteros von Samos: Grundlage für die Rekonstruktion des Tempels in seinen Bauphasen* . Bonn.

Hendrich, C. 2007. *Die Säulenordnung des ersten Dipteros von Samos* . Bonn.

Johannes, H. 1937. “Die Säulenbasen vom Heratempel des Rhoikos.” *MDAI(A)* , 62: 13–37.

Kienast, H.J. 1992. “Topographische Studien im Heraion von Samos.” *AA* , 171–213.

Kienast, H.J. 1995. *Die Wasserleitung des Eupalinos auf Samos* . Mainz.

Kienast, H.J. 1996. “Die rechteckigen Peristasenstützen am samischen Hekatompedos.” In Schwandner, ed., 17–18.

Korres, M. 1994. “The Architecture of the Parthenon.” In Tournikiotis, ed., 54–97.

Kuhrt, A. 1995. *The Ancient Near East c. 3000–330 BC* . Vol. 2. London.

Kyrieleis, H. 1981. *Führer durch das Heraion von Samos* . Athens.

Lewis, M.J.T. 2001. *Surveying Instruments of Greece and Rome* . Cambridge.

Murphy-O’Connor, J. 2008. *The Holy Land: An Oxford Archaeological Guide from the Earliest Times to 1700* . Oxford.

Naumann, R. and K. Tuchelt. 1963/1964. “Ausgrabung im Südwesten des Tempels von Didyma.” *MDAI(I)* , 13/14: 15–62.

Ohnesorg, A. 2007. *Der Kroisos-Tempel: Neue Forschungen zum archaischen Dipteros der Artemis von Ephesos* . Vienna.

Oleson, J., ed., 2008. *Handbook of Engineering and Technology in the Classical World* . Oxford.

Parker, S.B. 1997. *Stories in Scripture and Inscriptions: Comparative Studies on Narratives in Northwest Semitic Inscriptions and the Hebrew Bible* . Oxford.

Pedley, J. 2006. *Sanctuaries and the Sacred in the Ancient Greek*

World . New York.

Porter, J.I. 2011. *The Origins of Aesthetic Thought in Ancient Greece: Matter, Sensation, and Experience* . Cambridge.

Ratté, C. 1993. “Lydian Contributions to Archaic East Greek Architecture.” In des Courtils and Moretti eds., 1–12.

Ratté, C. 2011. *Ashlar Masonry Structures at Sardis* . Cambridge, MA.

Redmount, C.A. 1995. “The Wadi Tumilat and the ‘Canal of the Pharaohs.’” *JNES* , 54: 127–135.

Schwandner, E.-L., ed. 1996. *Säule und Gebälk* . Mainz.

Senseney, J.R. 2011. *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture* . New York.

Tournikiotis, P., ed. 1994. *The Parthenon and Its Impact in Modern Times* . Athens.

Van der Waerden, B.L. 1954. *Science Awakening* . Groningen.

Walter, H. 1990. *Das griechische Heiligtum, dargestellt am Heraion von Samos* . Stuttgart.

Wesenberg, B. 2007. “Das Paradeigma des Eupalinos.” *JDAI* , 122: 33–49.

Wilson, A.I. 2008. “Hydraulic Engineering and Water Supply.” In Oleson, ed., 285–318.

CHAPTER 6

The Greek West: Temples and their Decoration

Clemente Marconi

Introduction

In the eighteenth and nineteenth centuries, South Italy and Sicily became two of the destinations on the Grand Tour, the journey through France and Italy made by the young male members of the northern European aristocracy to complete their classical education (Wilton and Bignamini 1996; De Seta 2011). For many travelers, and for generations of artists and architects alike, temples like those at Paestum and Akragas were the best, if not the only, opportunity to have direct contact with Greek architecture, at a time when access to Greece was limited (Hellmann, Fraise, and Cazalas 1982; Cometa 1999; Carlino 2009). This period thus marks the beginning of the fascination of modern scholarship with the temples of South Italy and Sicily (best exemplified for the nineteenth century by Hittorff and Zanth (1870) and Koldewey and Puchstein (1899), and for the twentieth century by Gruben ([1966] 2001). This consideration is fully justified by the prominent role played by these buildings in the monumental architecture of both regions throughout the Archaic and Classical periods, which made them into landmarks of the ancient and, ultimately, modern landscapes.

This prominence resulted from the fact that temples served as symbols of the wealth and power of the communities responsible for their construction (Burkert 1988). This fact becomes particularly transparent for the West in the words of Nikias in Thucydides (6.20), as part of the debate which took place in Athens before the Sicilian expedition, in 415 (Marconi 2007: 194–195; White 2011: 32). Besides this symbolic value, however, temples – along with rituals – were first and foremost critical agents in the construction of the cultural identity of the new communities in the West, strengthening their feeling of being at “home away from home,” or *apoikia*, a term used by the Greeks to designate their settlements abroad of the Archaic period (Marconi 2007). In this role within the new communities, temples and rituals acted in the context of often delimited and elaborate sanctuary areas, which included a variety of other structures, especially sacrificial altars, porticoes, and dining halls (Pedley 2005). In our focus on temples and their architecture, we should not forget that the key to the full understanding of these structures includes

their consideration within this larger ritual and built environment.

This essay outlines the history of temple architecture and decoration in South Italy (a region also referred to as Magna Graecia) and Sicily, from the foundation of the Greek settlements in the second half of the eighth century to the advent of Rome in the third century BCE. The number of monuments is considerable and the literature vast, so that any presentation of the material ought to be selective. This may have the advantage of offering a more effective idea of the development of one of the most significant forms of expression in the art and architecture of the western Greeks.

The Geometric and Orientalizing Periods

The definition of sacred areas seems to have played a significant part in the planning of the new settlements, and to have done so from early on (Mertens 2006: 36–89). However, buildings do not seem to have played an important role in the first manifestations of cult practice, since the emphasis was laid upon ritual activity. According to the literary tradition, one of the first acts of the Chalkidian settlers of Naxos, the earliest foundation in Sicily, was setting up an altar to Apollo Archegetes (Thuc. 6.3). Yet the only evidence for a sacred building of the Geometric period in the entire West is an *oikos* at Syracuse dated to circa 710–700 BCE (Mertens 2006: 90; Lippolis, Livadiotti, and Rocco 2007: 841), recently excavated in the Piazza Duomo, to the west of the fifth-century Doric temple. A simple shrine (6.00 × 9.20 m), it consists of one room; its location in one of the main cult areas points to a definition of the sacred spaces of Syracuse from the earliest stages of settlement.

Sacred architecture in the West begins only in the second half of the seventh century. Generally after two to three generations in the life of the new settlements, temples emerge as a prominent feature in the shaping of sanctuaries (Martin *et al.* 1980: 247). These spaces, which are variously located at the core, the periphery, or outside the urban areas, fulfilled important functions within the social life of the new communities (Alcock and Osborne 1994; de Polignac 1995; Malkin 1996). Urban sanctuaries were generally associated with the institutions and myths linked to the world of the new settlements' origins. Extra-urban sanctuaries sanctioned the possession of the surrounding territory and acted as boundaries with other Greek centers or the non-Greek populations while reinforcing the link between rural communities and urban centers.

In this early period, temples featured simple *oikos* plans. The cella had elongated proportions and its articulation could vary from a single room, to a combination of either *pronaos* and *naos*, or *naos* and *adyton* at the rear. The

adyton was an inner chamber housing the cult image and ritual implements, and sometimes also votive offerings (Thalmann 1976; Hollinshead 1999). When the buildings were not made entirely of wood, the walls were made of mudbricks supported by low stone socles. Wood was used extensively, including for supports, the entablature, and the roof, protected with architectural terracottas from an early date.

The best representatives of this phase are Temple A at Himera, in Sicily, and the first temple at Contrada Marasà at Locri Epizephyrii, in South Italy. Temple A at Himera (625–600 BCE), located in the upper sanctuary and dedicated to Athena, was replaced in the sixth century by a larger structure (Temple B), which neatly incorporated its predecessor's foundations (Mertens 2006: 91–92; Lippolis, Livadiotti, and Rocco 2007, 819–820). These indicate that Temple A (6.04×15.75 m) was an oikos, with a long naos and an adyton. Foundations were constructed of river pebbles; the rest of the walls were mudbrick lined with terracotta slabs. A terracotta sima with tubular waterspouts suggests the existence of pediments on both façades.

The first temple in the Sanctuary of Aphrodite at Contrada Marasà (610–600 BCE) was also an oikos (approximately 8.20×22.50 m at the toichobate). It was larger than that at Himera and had a more complex plan, consisting of a monostyle pronaos with two doors giving access to the naos, which was divided into two aisles by a central row of columns (Mertens 2006: 95–97; Lippolis, Livadiotti, and Rocco 2007: 786–787). The walls were mudbrick, set on a stone socle and lined with terracotta slabs painted with meanders. Other terracotta plaques, decorated with disks and a scale-pattern, have been identified with metopes, although the corresponding triglyphs have not been found. The architectural terracottas include a geison revetment and a sima, and fragments of large disk akroteria have also been attributed to the roof.

Both temples at Himera and Locri provide evidence for the use of lining the mudbrick walls with terracotta slabs in this period. These terracottas appear to have been decorated with geometric patterns, with no evidence of figural decoration. Indeed, evidence for figural architectural decoration in the Greek west during the seventh century is scanty and limited to South Italy, consisting of antefixes decorated with female heads of Daedalic style (Winter 1993: 287). The architectural context of these antefixes remains unclear, but their typology is reminiscent of examples found in northwestern Greece.

The Early and Middle Archaic Periods

In Sicily, the transition into the sixth century is marked by some continuity, best shown by Temple H (600–590 BCE) at Naxos, an oikos with a low socle

of polygonal masonry supporting mudbrick walls lined with terracotta plaques painted with figures (Mertens 2006: 128; Pflug 2006; Lippolis, Livadiotti, and Rocco 2007: 828). These terracotta plaques were necessary for protecting the mudbricks, which were used in areas that lacked good building stone, mainly in Chalkidian settlements.

Elsewhere, where good limestone was available, mudbricks were quickly replaced with ashlars. A case in point is Selinous, where the first quarter of the sixth century saw the construction of a series of oikoi with the elevations entirely of stone, like the Temple Triolo N, south of the Sanctuary of Malophoros (Mertens 2006: 99–101; Lippolis, Livadiotti, and Rocco 2007: 831–832, 837–838; Marconi 2007: 77–82). Two significant features of temples built at Selinous in this period are the lack of a frieze and the adoption of a very simple geison. As for the first, it may be noted that although traditional narratives about the development of early Greek architectural sculpture tend to credit the western Greeks with the “invention” of carved metopes because of the consistent use of this form of decoration beginning in the middle of the sixth century (Ridgway 1993: 333–356), the introduction of the Doric frieze in this region took place relatively late. At Selinous the early adoption of the Doric frieze was associated with Temple M (10.90 × 25.75 m), a simple in antis building with pronaos, naos and adyton, dated to circa 560 BCE (Lippolis, Livadiotti, and Rocco 2007: 838–839; Marconi 2007: 83–84; Zoppi 2009).

The erection of the Apollonion at Syracuse (circa 580 BCE), on the northern tip of Ortygia, marked a major turning point in temple architecture in the West by introducing the stone colonnade (Figure 6.1; Mertens 2006: 104–111; Lippolis, Livadiotti, and Rocco 2007: 839–841; Marconi 2007: 38–50). An inscription carved on the stylobate expressed the pride of its builders, by mentioning the dedication to Apollo along with the name of the person (“Kleo[...]es”) variously regarded as the architect or, more likely, the contractor or supervisor or the donor who provided the funds.



Figure 6.1 Syracuse, Apollonion.

Source: C. Marconi.

The Apollonion was ambitious both in size (21.50×54.90 m) and plan, consisting of a peristyle of 6×17 columns, including a double colonnade across the front and a cella articulated into a deep pronaos distyle in antis, a long naos divided into three aisles by a double-storied colonnade, and a shallow adyton. The columns are the most striking feature. Made of the same local limestone as the rest of the temple, their shafts are monolithic. Particularly remarkable are the squat proportions of those of the peristyle, about four times the lower diameter. This, combined with the narrowness of the spacing, meant that the Doric capitals with their bulging echinuses and thick abaci almost touched each other, and the triglyphs above could not be regularly placed on axis with the columns and the center of the interaxials. The resulting, incongruous effect of the colonnade is an eloquent testimony to the anxieties of the architect, facing the task of erecting the first peripteral temple in the region. Some of the architectural terracottas are preserved, featuring the combination of separately made geison revetment and simas, painted with geometric and floral patterns that will become a signature of Archaic temples in the west (Winter 1993: 273–288).

The figural decoration included a more than life-size group of horse and rider on the apex of one pediment, winged creatures as corner akroteria, and a plaque with the gorgoneion in the tympanum. This figural decoration had a great impact in the region. Horse and rider akroteria were popular in both Sicily and South Italy, throughout the sixth and fifth centuries (Danner 1996;

Marconi 2007: 45–48; Ciurcina 2011: 409–412). Featuring male figures wearing a short chiton and boots, riding either black or white horses, these akroteria have also been identified with the Dioskouroi, making their epiphany and lending their protection to buildings. However, since these riders were generally placed on the façades individually, not in pairs, and since, in Athens, there is a documented hero called *epitegios*, “on the roof,” who is clearly distinct from the Dioskouroi, it is safer to leave the question of the identification of these riders open. The prominence given to this type of decoration on temples in the west is hardly missed and is best linked with the long-standing equestrian and cavalry tradition so characteristic of the Greek settlements in this region. No less important, throughout the sixth century, were pedimental gorgoneia (Danner 2000; Marconi 2007: 214–222). Scholarship on Greek temple decoration has traditionally assigned an apotropaic function to these monstrous figures, directed against supernatural attacks or would-be-sacrilegious actions by humans. One may notice, in turning the attention to worshippers, that anxiety, fear, and terror were central to the experience of the sacred in Greek culture. From this point of view, the function of these pedimental gorgoneia may be regarded as a strategy to transform their viewers, increasing their sense of *mysterium tremendum* upon their encounter with the sacred.

The Apollonion inspired a generation of peripteral temples built in Sicily over the next few decades: Syracuse (Olympieion), Megara Hyblaia (Temple A), and Gela (Temple B) (Mertens 2006: 111–112; Lippolis, Livadiotti, and Rocco 2007: 813, 824, 843; Marconi 2007: 50–60). Last in this series of buildings is Temple Y at Selinous (560–550 BCE), whose original location remains unknown (Mertens 2006: 115–118; Lippolis, Livadiotti, and Rocco 2007: 832; Marconi 2007: 84–126). Like the Apollonion, the columns of Temple Y were monolithic and had squat proportions, but the triglyphs were now aligned with the axis of the columns and the center of the interaxials below. Temple Y is associated with the earliest known set of carved metopes in the west. These reliefs, traditionally known as “small metopes,” can be divided into two groups, and it remains uncertain whether they all decorated the same building. To the first group belong the metopes featuring a sphinx, the rape of Europa, three goddesses (who defy an exact identification), and the Delian Triad, (with Apollo playing the kithara and reaching for his mother Leto and sister Artemis). The two metopes of the second group feature, respectively, a frontal chariot with two goddesses, most likely Hera and Athena, and the fight between Herakles and the Cretan Bull or Acheloös. These metopes introduce the combination of divine and mythological figures that will be characteristic of carved metopes at Selinous throughout the early Classical period. Interestingly, the Delian Triad was worshipped at Megara Nisaia, one of Selinous’ two mother-cities.

The next peripteral temple at Selinous was of larger proportions and

dominated the main urban sanctuary. The beginning of the construction of Temple C (23.93×63.76 m) may be placed at about 540 BCE, but its completion apparently took decades, dating to about 510 BCE, as indicated by the style of its carved metopes (Mertens 2006: 119–125; Lippolis, Livadiotti, and Rocco 2007: 830–831; Marconi 2007: 127–184). Some elements are reminiscent of the Apollonion at Syracuse, including the peristyle of 6×17 columns, with a double colonnade across the front; in addition, the spacing of the columns was wider on the fronts than the flanks. In Temple C, however, the columns were more slender and higher, and the entablature was considerably lighter. Furthermore, the triglyphs were accurately placed on axis with the columns and the centers of the interaxials below. Two elements of the plan particularly distinguish Temple C from the Apollonion: the deep pteron and the long cella consisting of a sequence of closed pronaos, naos without columns, and adyton. Both features are characteristic of temples built at Selinous in the following decades and have been explained through association with ritual practice. Thus, the large pteron have prompted the suggestion that the space between the cella and peristyle may have been used for processions, and the lack of interior columns in the naos has led to the proposal that on the same festive occasion, worshippers entered the cella and reached the front of the adyton. The presence of a large altar in front of Temple C reminds us that, in terms of cult practice, the main use of this building was as a house of the god and as a backdrop for ritual practice performed in the open-air.

Besides a rich apparatus of architectural terracottas on the roof, Temple C featured figural decoration: large gorgoneia filled the pediments ([Figure 6.2](#)), winged creatures stood as corner akroteria, and carved metopes adorned the main front. These metopes, executed in high relief, are only partially preserved. Best known is one of the panels that was originally placed above the central intercolumniation, featuring the arrival of Apollo on his chariot, welcomed by Leto and Artemis; next, above the intercolumniation to the right, were Perseus decapitating Medusa in the presence of Athena, and Herakles carrying the Kerkopes upside-down on a pole; finally, the metope at the corner featured Orestes killing Clytemnestra. This is the same combination of divine and heroic characters seen on the “small metopes.” Particularly notable is the presence of the temple’s divinity at the center of the frieze, on axis with the door and the cult statue, as if making his epiphany to the community gathered around the altar. Also significant is the grouping of these figures. The north section of the frieze were all Dorian heroes par excellence, with Perseus, Herakles, and Orestes, which would have been a kind of genealogy in stone for a Dorian community like Selinous.

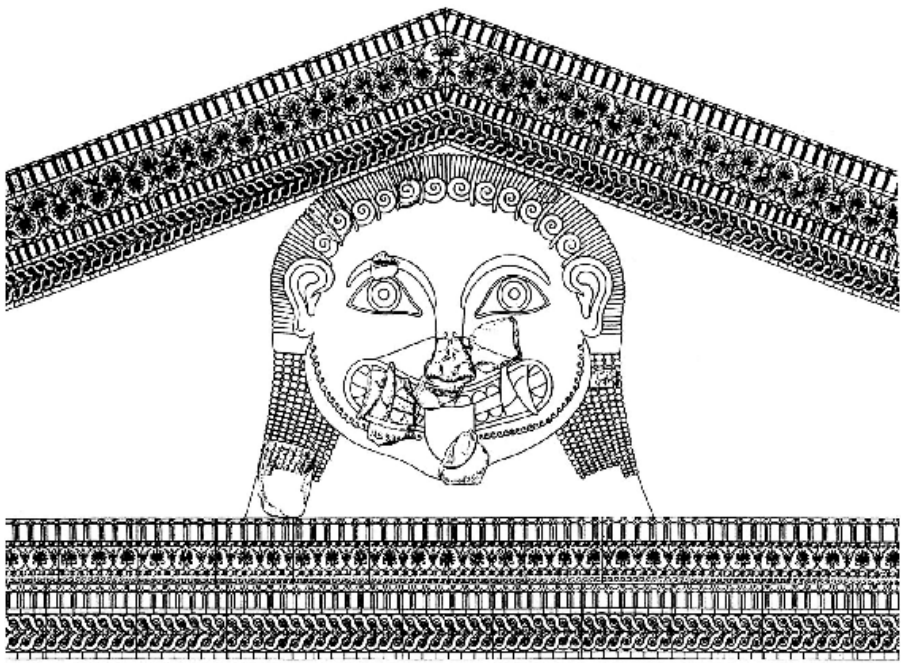


Figure 6.2 Selinous, Temple C, pedimental gorgoneion, after Gàbrici 1935.

Source: C. Marconi.

As in Sicily, the transition into the sixth century was marked in South Italy by continuity with the past. Particularly notable is a series of relief friezes for the decoration of the geison revetment of small buildings (Mertens-Horn 1992; Marconi 2007: 14–16; for the function, cf. Osanna 2011). At Metapontum, one frieze features the departure of a warrior; another shows a religious procession. Fragments of friezes depicting the same procession come from Siris and Francavilla near Sybaris, pointing to a wide circulation of molds. This tradition of terracotta friezes, for which the Cyclades may have provided the inspiration, came to an end with the rise of monumental architecture.

The earliest peripteral stone temple was the so-called Temple of Poseidon at Taras (circa 570 BCE), of which little is known (Mertens 2006: 129–130; Lippolis, Livadiotti, and Rocco 2007: 801). The limited knowledge of the stone architecture from Sybaris makes it hard to assess the contribution of this city to the development of monumental architecture in this region (Mertens 2006, 135–136; Lippolis, Livadiotti, and Rocco 2007, 799–800). Significant evidence is available instead from two other Achaean settlements, Metapontum and Poseidonia (Paestum).

Before the middle of the sixth century, Metapontum started investing considerably in monumental stone temples (Mertens 2006: 136–138, 149–155; Lippolis, Livadiotti, and Rocco 2007: 791–792). Two large peripterals were planned in the main urban sanctuary with stone imported from the area

of Taras: Temple A I (approximately 23.20×46.40 m), perhaps dedicated to Hera, construction of which began circa 570–560 BCE, and Temple BI (approximately 19.85×38.30 m), dedicated to Apollo, erected a few years later. For some reason, the construction of the two temples was interrupted at different stages. Shortly afterwards, a second attempt met with success. On the site of the incomplete Temple A I, Temple A II (540–530 BCE) was the largest (20.55×49.82 m) in the sanctuary; it had a peripteral plan of 8×17 columns, with a double row of columns across the front and two rows of columns in the naos, similar to the Apollonion in Syracuse. Unlike the Apollonion, the cella did not have an adyton at the rear, or an opisthodomos. The Doric entablature displays interesting features, including the lack of a taenia with regulae and guttae. A dedicatory inscription on the architrave, partly preserved, mentions the person responsible for the construction, who invoked protection “for himself and his family” (*autoi kai genei*). Rather than a dedication of a tyrant, this text seems to be pointing to one of the local aristocratic families, suggesting a connection between the emergence of monumental temple architecture in the region with the rise to power of families comparable to the aristocratic *gene* of mainland Greece. These families fostered the construction of temples as a means of enhancing their command of the power of the sacred and thus their prestige and social standing. The Temple of Apollo B II (530 BCE) retained the central colonnade inside the cella and the peripteral plan of its predecessor, which now consisted of 7×15 columns (19.85×41.60 m at the foundations). Except for the columns on the main front, and the first two on the flanks, the peristyle consisted of half columns attached to a continuous wall.

A few years after Metapontum, Poseidonia (Paestum) made a similar decision to invest in monumental stone temple architecture. Two temples of Hera were planned around the same years (550–540 BCE), in the southern urban sanctuary (the so-called Basilica) and the extra-urban sanctuary at the Foce del Sele respectively.

The temple at Foce del Sele (approximately 17.80×34.50 m at the foundations), planned as a peripteral with 6×12 columns, was left unfinished (Mertens 2006: 138–140; Lippolis, Livadiotti, and Rocco 2007: 798–799; Marconi 2007: 200–202; Greco *et al.* 2010: 39–42). Its Doric frieze, composed of triglyphs and sculpted metopes, was partly carved: 38 metopes have been preserved. Carved in high relief, finished to varying degrees, they feature one of the most significant gatherings of mythological representations in Archaic Greek temple decoration. This emphasis on myth reminds us that sanctuaries were important places for poetic performances on the occasion of festivals, including the Greek west. The narrative revolved around a variety of characters and events. A large number of the metopes are related to the deeds of Herakles: the battle with the centaurs, wrestling with the Nemean lion, the delivery of the Erymanthian boar, the dispute with Apollo over the Delphic

tripod, carrying the Kerkopes, and the fight with Antaeus. Another series of reliefs reference the Trojan War and its aftermath: Achilles ambushing Troilos, the suicide of Ajax, Clytemnestra trying to prevent Orestes from killing Aegisthus. Other subjects include Apollo and Artemis shooting Tityos and the punishment of Sisyphus. Evidently, the rationale behind the organization of mythological scenes was not thematic unity but instead association and accumulation, as can also be seen in contemporary poetry and vase painting.

The construction of the Basilica (22.95×52.71 m) was more successful, although the building took a long time to complete, from after the middle of the sixth century until 520–510 BCE (Mertens 2006: 140–149; Lippolis, Livadiotti, and Rocco 2007: 796–797). The temple is a peripteral with 9×18 columns, the wide pteron conferring the plan an almost pseudodipteral arrangement. The cella features a tristyle in antis pronaos, a naos divided into two naves by a central row of columns, and an adyton. This articulation of the cella came after a series of changes in plan, which included a different configuration of the back chamber, originally conceived as an opisthodomos. These changes have prompted the speculation that the pteron and the interior of the cella were both used for processions. Once again, the large sacrificial altar set in front of the Basilica suggests that this temple mainly served as a backdrop for large ceremonies in the open air. The columns of the Basilica are notable for their strong tapering and pronounced entasis. Also remarkable is the luscious floral decoration of the capitals, originally painted with vivid colors. The Basilica featured richly polychrome architectural terracottas, including a “baldachino” sima with lively lion heads (Mertens-Horn 1988: 133–134). It is most likely that these were the only figural decoration of the building.

The Late Archaic Period

The late Archaic period saw the same interest in temple architecture of the preceding decades. Literary sources and material culture point to the relations of both Sicily and South Italy with East Greece, which are reflected in the adoption of the Ionic order (Mertens 2006: 241–253; Lippolis, Livadiotti, and Rocco 2007: 348–352). In Sicily, Selinous was in the forefront in the development of Doric temple architecture. There was the construction of two new temples: Temple F (24.37×61.88 m) on the eastern hill and Temple D (23.63×55.96 m) in the main urban sanctuary, elaborated on the model established by Temple C (Mertens 2006: 227–231; Lippolis, Livadiotti, and Rocco 2007: 831–832, 835). Cultic reasons may be behind the decision to retain the deep pteron and the long naos without columns, with the adyton at its end. Yet the plan shows an interest in a better coordination between cella and

colonnade, and for clearer relations between fronts and flanks, with the latter being shortened. Along similar lines, in the design of the elevation, a better articulation was sought of both the columns and the entablature. Temple F – generally dated to about 520 BCE but certainly finished only in about 490 BCE, judging from the style of its carved metopes – features the presence of screens that were used to close the intercolumniations, except for the center of the main east front. It is likely that the function of these screens was connected with cult practice, reminiscent of the Temple of Apollo B II at Metapontum, where closed pteron allowed a space for votive offerings.

Another significant feature of Temple F was the introduction of a limestone sima with lion-head waterspouts, which replaced earlier terracotta examples. The temple is best known for the carved metopes that decorated its main east front, featuring the gigantomachy, with each relief featuring a duel between one divinity and their opponent (Marconi 1995). The subject of the gigantomachy was popular in architectural sculpture at the time, including at the Megarian Treasury at Olympia, which commemorated a victory at war against Corinth. Likewise, the gigantomachy of Temple F may have alluded to contemporary military events.

Located directly to the north of Temple F, Temple G though designed in the same years conformed to a wholly different standard (Mertens 2006: 231–236; Lippolis, Livadiotti, and Rocco 2007: 835–836). The building, with its pseudodipteral plan of 8×17 columns, was of gigantic proportions (about 49.97×109.12 m), paralleling the dipteroi of East Greece and the Olympieion at Athens. In particular, the hypaethral naos with a naiskos at the end is reminiscent of Didyma. A large portion of Temple G was completed within about forty years (520–480 BCE), during which time the construction progressed westwards, introducing significant changes in the design. Although the temple was in use from rather early on in its construction, the structure was still unfinished when Selinous fell to the Carthaginians in 409.

At Akragas, the early fifth century saw the introduction of the peripteral plan, with Temple A (25.33×67 m) assigned, but on insufficient evidence, to Herakles (Mertens 2006: 236–239; Lippolis, Livadiotti, and Rocco 2007: 803). Second in size only to the Olympieion, the building is in a prominent location near to Gate IV. The plan, with a colonnade of 6×15 columns, features a number of innovative characteristics, such as the opisthodomos, the corner contraction, and interior staircases. Similarities with the entablature of Temple F at Selinous suggest some degree of interaction between the two centers.

The diffusion of the Ionic order in Sicily is manifested in the construction of a series of buildings of this order at various sites, including Gela, Catania, and Syracuse. This diffusion is indicative of the degree of internationalism reached by many centers towards the close of the sixth century, although it is difficult to pinpoint specific sources of influence. For one source we do have

evidence: there is a plausible connection between Samos and the Ionic Temple at Syracuse (510–500 BCE; 22.60×55.90 m) in style and date, since Samian masons may have left their island after the death of Polycrates and ventured to find work at Syracuse (Mertens 2006: 244–247; Lippolis, Livadiotti, and Rocco 2007: 842–843). Ionic features were also introduced in buildings of the Doric order, like the Temple of Aphrodite at Akrai (19.10×40.40 m) a peripteral of 6×13 columns, whose triglyphs featured a rich decoration, including a spiral frieze on their capitals and palmettes topping their femors (Mertens 2006: 249–250; Lippolis, Livadiotti, and Rocco 2007: 811).

In South Italy, Metapontum and Poseidonia (Paestum) maintained a leading role in architectural development. At Metapontum, the extra-urban Temple of Hera, known as Tavole Palatine (16.13×33.24 m), featured a roof similar to that of the Basilica, which allows for its dating to about 520–500 BCE (Mertens 2006: 216–217; Lippolis, Livadiotti, and Rocco 2007: 793; Sonntagbauer 2009; Lazzarini 2010). The peripteral plan with 6×12 columns is consistent with the tendency of this period to shorten the flanks of the temple, and another new feature is the placement of the cella at the center of the colonnade. Other elements reference the local tradition, like the entablature, similar to that of the Temple of Apollo A II.

The late Archaic period saw two major projects at Poseidonia (Paestum). One was the Temple of Hera II at Foce del Sele (16.84×37.08 m), built around 500–490 BCE, partly on top of the unfinished predecessor (Mertens 2006: 220–222; Lippolis, Livadiotti, and Rocco 2007: 798–799; Greco *et al.* 2010: 45–49). Restored with a peristyle of $8 \times 17/13$ columns, the new temple featured remarkably wide ptera, particularly on the main east front. The cella presented the canonical sequence of pronaos in antis, naos, and adyton. In accordance with the local tradition, the Doric entablature replaced the combination of taenia, regula, and guttae, and the mutules with kymatia, while the front had carved metopes featuring a ritual dance, a subject experimented with a few years earlier on a frieze from Sybaris.

Dating to the same years, the Temple of Athena (14.54×32.88 m) in the north urban sanctuary represents a significant step forward (Figure 6.3; Mertens 2006: 222–227; Lippolis, Livadiotti, and Rocco 2007: 794; Sonntagbauer 2009). This building references the local tradition in the strong entasis of its columns and the bulging echinuses of its capitals. Also in keeping with the local tradition are the extraordinary rich Ionic and Lesbian kymatia replacing the combination of taenia, regula, and guttae, and the mutules. A novelty for stone temple architecture is the non-mutular geison with coffers, a solution anticipated in the entablature of the altar of Temple A II at Metapontum. This new stone geison made terracotta revetments unnecessary, and the sima with lion-head waterspouts was now made of sandstone (Mertens-Horn 1988: 116–118). Remarkably, in this building, the emphasis on ornamentation was not

matched by a comparable interest in figural decoration.



Figure 6.3 Paestum, Temple of Athena.

Source: C. Marconi.

Particularly significant are the innovations in the plan of the Temple of Athena, which was conceived as a *hekatompedon* (110 feet of 32.8 cm). Consistent with the period are the peristyle of 6×13 columns and the use of the same interaxial for both fronts and flanks. Also notable are the narrow pteron on the back and flanks, in contrast with the deep pteron on the main, east, front. The latter gave access to an elaborate pronaos of the Ionic order, prostyle tetrastyle and two columns deep. Steps at the entrance of the pronaos and the naos gave access to the main chamber, which lacks an adyton. Interior staircases in the cella on either side of the door from the pronaos, originally leading to the attic (with one probably intended for ascending, the other for descending), represent an important feature, which is first met in this temple and will become a signature of Greek temple architecture in the west during the fifth century (Miles 1998–1999). The function of these staircases has been intensely debated, and proposals include ready access to the attic and roof for maintenance; the use of the attic for storage of votive or ritual objects; or the use of the attic as a ritual space, including for the enactment of epiphanies for worshippers gathered in the pronaos (see [Chapter 15](#)). The frequency, prominence, and elaboration of interior staircases in temples in both regions are strongly suggestive of a ritual function.

The Early Classical Period

The early Classical period marks a moment of flourishing in the history of Greek Sicily, which was connected with the rise to power, from 491 to 465 BCE, of two influential ruling dynasties, the Deinomenids at Gela and later Syracuse, and the Emmenids at Akragas, in close kinship relations. The two moments of greatest of glory for the Emmenids and Deinomenids were their joint victory (480 BCE) against the Carthaginians at Himera and the naval victory (474 BCE) of Hieron I at Cumae against the Etruscans. Both families were generous promoters of art and culture, and their patronage extended to temple architecture.

The Olympieion (Temple B) at Akragas would best exemplify this connection, if the building – lacking an archaeological dating – were to be connected with the rise to power of Theron (488 BCE), as argued by more recent scholarship (Mertens 2006: 261–266; Lippolis, Livadiotti, and Rocco 2007: 804). With its gigantic size (52.740×110.095 m), the Olympieion clearly emulated Temple G at Selinous. Built on massive foundations and rising on five steps, the temple featured a peristyle of 7×14 supports formed of semi-columns on the outside and pilasters inside, connected with screen walls. These screen walls finds parallels in Temple B II at Metapontum, and one is also reminded of Temple F at Selinous. The cella of the Olympieion featured walls articulated with square piers, which corresponded to the pilasters of the peristyle, and comprised a short pronaos without columns, a long naos, and an opisthodomos. Since the width of the flank pteron corresponded to that of the cella, the plan of the interior came close to a three-aisled division, similar to the naos of Temple G. As at its predecessor at Selinous, the pteron were covered with pitched roofs, and the naos was unroofed. Both foundations and steps are built of ashlar of the same dimensions. Everything in the Olympieion appears to have been planned carefully and systematically, from the quarrying of the stone to its transportation, dressing, and installation. This may have streamlined the process of the construction of the temple, which was probably finished, although not as quickly as often assumed, judging from the style of the lion-head waterspouts of the sima, which may be assigned to the second half of the fifth century (Mertens-Horn 1988: 109–111).

In addition to the sima, the building made considerable use of figural decoration. According to one reading of the text of Diodorus Siculus (13.82.4), the east pediment featured the gigantomachy and the west pediment the Ilioupersis, for which evidence is scanty (Danner 2001: 25–28). Particularly significant are the Atlantes, which were positioned on the exterior and assisted in carrying the entablature. These gigantic sculptures represent the main novelty in the design of the temple, and the earliest occurrence of male supports in Greek architecture. On our building, they were clearly conceived as depictions of Atlas, the Titan, who, as punishment for revolting

against the gods, was forced by Olympian Zeus to support the heavens on his shoulders. This imagery would have provided not only a good metaphor for the victory over the Carthaginians by the coalition led by the Emmenids and Deinomenids but also an ominous message directed to the local opponents of Theron's rule (Marconi 1997; Vonderstein 2000). A monumental altar in front of the Olympieion, the largest in the Greek world at the time, must have represented the focus of large ceremonies.

Two temples displaying similar features have been traditionally connected with the victory at Himera, although they both lack an archaeological dating. The first building is the so-called Temple of Victory at Himera, probably dedicated to Athena and considered to be a thank-offering erected near to the battlefield (Mertens 2006: 266–268; Lippolis, Livadiotti, and Rocco 2007: 819; Zoppi 2010). The design of this building (22.46×55.91 m) shows the influence of Temple A (Herakles) at Akragas, including the cella articulated into pronaos, naos, and opisthodomos, and the interior staircases. The peristyle of 6×14 columns is unusually long, and the design relates to an interest in retaining deep pteron on both fronts. This emphasis on the fronts contributed the double corner contraction, the effect of which was to widen the central intercolumniation. Of the figural decoration, which included pedimental sculptures (Bonacasa 2005), the best known are the remarkably large lion-head waterspouts of the simas. There are two different renderings of the animals, of which one is more aggressive than the other (Mertens-Horn 1988: 95–100). The style of these lion heads suggests, among other things, that the workshop responsible for this building came from Akragas.

The so-called Temple of Athena at Syracuse, dated to the same year as the Temple of Victory at Himera (480 BCE), is still relatively well preserved, owing to its later transformation into a Christian church (Mertens 2006: 268–273; Lippolis, Livadiotti, and Rocco 2007: 841–842). The building, a peripteral of 6×14 columns (22.20×55.45 m), features the now canonical articulation of the cella into naos, with a pronaos and opisthodomos distyle in antis, and its dimensions are closely similar to the Temple at Himera, but with an almost perfect ratio of 2 : 5 between fronts and flanks. The temple also features the same double corner contraction. The adoption of a smaller unit of measurement, along with some stylistic differences, including smaller lion-head waterspouts for the marble sima, suggests that it was built by a different workshop than the temple at Himera (Mertens-Horn 1988: 100–103). A marble Nike has been tentatively restored as a corner akroterion (Danner 1997: 40–41). Literary sources mention a golden shield on the main pediment, as well as magnificent doors, with gold and ivory decorations. In addition, in the Hellenistic period, paintings were on display in the cella.

Close in date to the buildings at Himera and Syracuse is the Temple of Athena (Temple C) (470 BCE) on the acropolis of Gela, which is smaller (approximately 19.50×49.10 m) but of similar design (Mertens 2006: 274–

276; Lippolis, Livadiotti, and Rocco 2007: 813–814). Because, starting in the Middle Ages, it was quarried for building material, the building is poorly preserved. The recent discovery of the remains of its high quality marble roof, including floral akroteria, roof tiles, and sima, points to the activity of masons from the Cyclades (Heiden 1998), whose presence in South Italy around the same years also has been suggested (Rocco 2010).

The Temple of Hera at Selinous (25.308×67.749 m) dates to some years later (460–450 BCE), and conforms only in part to the new trends (Mertens 2006: 279–283; Lippolis, Livadiotti, and Rocco 2007: 833–835). The temple is a peripteral of 6×15 columns, whose unusual length reflects the decision to retain the adyton at the end of the naos, in addition to the opisthodomos. Characteristic features of the period are the cella neatly fitted into the peristyle and the adoption of the same interaxial on both fronts and flanks. These display the same, simple corner contraction. On the east front, a staircase, limited to the three central intercolumniations, leads into the cella. Six additional steps led into the naos, and three more to the adyton, in which the seated cult statue of the goddess was further protected by a baldachin-like structure.

The temple is archaeologically dated to 460–450 BCE, which closely corresponds to the early Classical style of its carved metopes, decorating the friezes of pronaos and opisthodomos (Marconi 1994). Of the original 12 reliefs, made of local limestone, with inserts in Parian marble for exposed female skin, four are well preserved: those depicting the *hieros gamos* of Zeus and Hera (not Hades and Persephone, as wrongly suggested by Østby (2009: 162–163)), the punishment of Aktaion by Artemis, the Amazonomachy of Herakles, and Athena killing the Giant Enkelados. A fifth relief, now considerably worn, featured Apollo chasing a nymph, and there are enough fragments to restore a sixth metope with the Kalydonian boar hunt. (The existence of this sixth relief disproves the speculation by Junker (2003) that all 12 metopes would have featured deities.) In continuity with the Archaic period, at Selinous the display of the pantheon of the city was as important as the mythological narrative. The *hieros gamos* played a prominent role in festivals of Hera in the Greek world, and the metope featuring this subject, placed at the center of the east frieze, raises interesting considerations about the interaction between architectural sculpture and ritual. In general, it is evident that the emphasis of these metopes was on the celebration of Hera as the protector of the city and of marriages.

In South Italy, the influence of the Temples at Himera and Syracuse is apparent in the design of the Temple of Hera (470 BCE) at Cape Lacinium, near Croton, of comparable dimensions (22.18×55.61 m) (Mertens 2006: 276–278; Lippolis, Livadiotti, and Rocco 2007: 779–780; Rocco 2008 and 2009). This building made considerable use of marble, including the roof, part of the entablature, and the pedimental sculptures (Belli Pasqua 2008, 2009,

2010). Two generations later, it featured paintings by Zeuxis (De Angelis 2005). The interest in marble akroteria in South Italy is further attested for Temple C at Metapontum, which was rebuilt during this period, with a simple in antis plan, carefully incorporating its Archaic predecessor (Mertens 2006: 278; Lippolis, Livadiotti, and Rocco 2007: 790–791).

The best-preserved temple of this period in the west is the so-called Temple of Poseidon at Paestum (generally assigned to Hera, or, as an alternative, to either Zeus or Apollo, but always on insufficient evidence), in the southern urban sanctuary (Figure 6.4; Mertens 2006: 283–295; Lippolis, Livadiotti, and Rocco 2007: 797; Rocco 2008). This building has often been compared with the Temple of Zeus at Olympia, mainly owing to the presence of two double-storied rows of columns in the naos, and this comparison has suggested a dating to 460–450 BCE. The plan (24.289×60.008 m) consists of a peristyle of 6×14 columns, surrounding a cella articulated into a naos divided into three aisles, with a pronaos and opisthodomos distyle in antis. Interior staircases were planned, but only the north one was completed.



Figure 6.4 Paestum, So-called Temple of Poseidon.

Source: C. Marconi.

The temple is so well preserved that it is still possible to detect a series of architectural refinements. These include a simple corner contraction on the fronts and a double corner contraction on the flanks; the upward curvature of the stylobate, on both fronts and flanks; the entasis; and the inclination towards the center of the columns on the fronts. Interestingly, for all this sophistication in design, the dimensions at the stylobate do not correspond to any clear numeric proportion, nor do they correspond to exact multiples of

feet. In addition, the interaxials on the fronts are slightly shorter than those on the flanks, an archaic feature that goes along with the thickening of the columns on the fronts and the tapering of the triglyphs. Another interesting feature is the irregularities in the rhythm of the frieze and columns, including the displacement of the triglyphs with respect to the column axes, and of the regulae and mutules with respect to the triglyph axes. The exceptional state of preservation of the building makes it possible to detect all these irregularities, which may have been more widespread than it is generally assumed. The temple did not feature akroteria, pedimental sculptures, or carved metopes, and the use of figural decoration was confined to the lion-head waterspouts of the sima, carved of Cycladic marble.

Contrary to the situation in Sicily, in South Italy the Ionic order flourished during this period. A case in point is the Ionic Temple (Temple D, 470–450 BCE) at Metapontum, in the northern sector of the urban sanctuary (Mertens 2006: 296–302; Lippolis, Livadiotti, and Rocco 2007: 792–793). The temple (15.70 × 39.26 m) is poorly preserved, but the remains of the elevation have suggested a restoration as a pseudodipteral of 8 × 20 columns, with the cella neatly fitted into the colonnade, and consisting of a deep closed pronaos followed by a naos. The profiles of the bases of the columns somewhat resemble the Samian type, whereas the capitals are loosely reminiscent of the Ephesian type. The differences between the two temples are significant enough, however, to exclude the conjecture that the temple was built by masons from East Greece. A notable feature is the presence of a frieze decorated with palmettes and lotus flowers, placed between the architrave and the dentils, a design unusual for the Ionic order at such an early date. Also of interest is the adoption, upon the stone geison, of a terracotta sima, featuring gorgoneia antefixes, another reference to the Archaic tradition in which the building appears to have been rooted.

Another important building of the Ionic order built in South Italy during this period is the Temple of Aphrodite at Contrada Marasà in Locri Epizephyrrii (Mertens 2006: 305–309; Lippolis, Livadiotti, and Rocco 2007: 786–787). Poorly preserved, the restoration of both plan and elevation of this temple have been intensely debated. The same goes for the figural apparatus, to which once belonged marble statues featuring the Dioskouroi dismounting from their horses (Costabile 1995; Danner 1997: 63–68), which are best regarded as a later addition to the gables.

The High Classical Period

The later part of the early Classical and the high Classical Periods saw a considerable investment in temple construction on the part of Akragas, a city that, according to literary sources, achieved a considerable level of material

prosperity in these years (Diod. Sic. 13.81.4–5), mainly through the export of olives and wine to Carthage (Mertens 2006: 381–399; Lippolis, Livadiotti, and Rocco 2007: 805–808; White 2011). The number of peripteral temples built in this city between 460 and 406 BCE – the year that saw the attack by the Carthaginians – is staggering. The series was probably opened by the Temple of Athena (Temple E) on the acropolis (460 BCE, approximately 15.10×34.70 m). Construction of temples then continued in succession following the broad ring of the city walls: Temple D (so-called Temple of Hera Lacinia), placed in a conspicuous position at the eastern edge of the ridge bordering the city to its south (460–450 BCE, 16.94×38.13 m); Temple L, in the Sanctuary of the Chthonic Deities, at the opposite west end of the same ridge (460–450 BCE, 21.20×44.60 m); in the next generation with Temple F (so-called Temple of Concord), near to the center of the ridge (Figure 6.5; 450–440 BCE, 16.925×39.42 m); Temple I (so-called Temple of the Dioskouroi), in the Sanctuary of the Chthonic Deities (450 BCE, 16.43×33.99 m at the stereobate); and finally Temple G (so-called Temple of Hephaistos), located in the southwestern corner of the city and unfinished (410–406 BCE, 17.25×39.43 m).



Figure 6.5 Agrigento, Temple of Concord.

Source: C. Marconi.

The state of preservation of all these temples is uneven, from nearly complete in the case of the Temple of Concord, which was reused as a Christian church in the Middle Ages (Carlino 2011), to rather poor in the case of Temple L, which was systematically pillaged of its blocks. Overall, a degree of uniformity is apparent, in terms of size and plan, and a common idea appears to have informed the design: namely, a conscious reaction to the Olympieion.

In contrast with the colossus of the age of Theron, this new generation of temples is characterized by understated dimensions, which translate into peristyles of 6×13 columns; by uniform plans, with the cella increasingly better fitted into the colonnade, and articulated into naos without interior supports, with pronaos and opisthodomos distyle in antis, and interior staircases; and finally, by canonical elevations, characterized by the lack of figural decoration, with the exception of the lion-head waterspouts of the sima. Some have connected this contrast in design with the Olympieion, and the general uniformity of the temples of this new generation with the advent of the democratic government in Akragas, after the collapse of the Emmenid rule (see especially Höcker 1993; Mertens 2006: 381–382). According to this theory, the similarities between the various buildings would have allowed for better public control, and each new project could have more easily been subject to discussion in a public assembly. Our knowledge, however, of the government of Akragas in these years is fairly limited, and we have to consider that the use of the term *demokratia* by ancient authors was rather elastic, and it does not warrant an equation with the radical Athenian democracy.

The trends in temple architecture at work in Akragas, notably the tendency towards understated dimensions and the avoidance of figural decoration, find an important parallel at Selinous. Here the southern urban sanctuary underwent a major renovation around the middle of the fifth century, including the expansion of the temenos area towards the west and the construction of two peripteral buildings, known as Temple O (19.10×44.20 m) and Temple A (16.13×40.31 m) (Mertens 2006: 400–404; Lippolis, Livadiotti, and Rocco 2007: 833). Both temples were planned with a colonnade of 6×14 columns, and with a cella featuring a pronaos, naos, adyton, and a short opisthodomos, along with interior staircases of helical – rather than the more common rectilinear – plan in Temple A. While the construction of Temple O may have never reached above the level of the foundations, Temple A was completed within a few years. This building bears the same proportions as the Temple of Concord, and a combination of single corner contraction on the flanks and double corner contraction on the fronts that comes close to the Temple of Hera Lacinia. The temple featured lion-head waterspouts, but the lack of any other figural decoration, in a center like Selinous, is notable (Mertens-Horn 1988, 104–105), and it conforms to the tendency of architects in Sicily during the high Classical period to reduce drastically the use of architectural sculpture (an exception are the terracotta akroteria added to Temple B at Himera circa BCE 450: Gasparri 2011).

This is also apparent in the case of the temples at Segesta, the Elymian center in western Sicily, which in the second half of the fifth century entertained considerable relations with both Selinous and Athens. A first Doric peripteral temple (approximately 28×56 m) was built around the middle of the fifth

century at Contrada Mango, on the south slope of the acropolis (Mertens 2006: 408–410; Lippolis, Livadiotti, and Rocco 2007: 830). On the basis of the few blocks visible today, it features similarities with Temples E and A at Selinous, and it has been credited to a workshop from this city. Far more imposing, and considerably better preserved, is the large Unfinished Temple (23.13×58.05 m), whose construction came to a halt at the stage when the cella would have been built (Mertens 2006: 410–416; Lippolis, Livadiotti, and Rocco 2007: 830). The temple is thus limited to the outer colonnade of 6×14 columns. The incomplete nature of the temple is also manifested by the numerous bosses and the unfluted columns. This is the only peripteral temple built in Sicily in the second half of the fifth century with a size comparable to the temples of the early Classical period, which speaks to the ambition of its non-Greek patrons. Several elements in the design, however, conform to high Classical standards, including the cella planned with pronaos, naos, and opisthodomos neatly fitted into the colonnade, and the use of double corner contraction. Particularly notable is the use of the 2 : 3 ratio for the proportioning of the entablature, which has been compared with Athenian temple architecture of the high Classical period, inferring a direct knowledge. The lack of finishing of the temple at Segesta has been explained through an association with the beginning of the war launched by the Carthaginians in Sicily in 409 BCE, which brought to an end the economic prosperity and cultural flourishing of many Greek centers in the island.

The stagnation in Sicily after the end of the high Classical period had already been experienced in South Italy during the second half of the fifth century. In this area only two temples date to the period under consideration: a poorly preserved Ionic temple at Hipponion (18.10×27.50 m) of the end of the fifth century, the last temple built in this order in the west (Mertens 2006: 418–419; Lippolis, Livadiotti, and Rocco 2007: 785–786); a Doric temple at Kaulonia (16.37×38.39 m) in the sanctuary at Punta Stilo (Mertens 2006: 416–418; Lippolis, Livadiotti, and Rocco 2007: 783). This last building, which replaced an Archaic predecessor, features a series of elements typical of Sicilian architecture, and it has also been credited to a workshop from Syracuse (Gullini 1983: 314). However, a connection with the early Classical Temple of Hera at Cape Laciniun is preferable, also on account of its similar roof of Parian marble, which may have included akroteria in the form of sphinxes supporting riders (Parra 2010).

The Late Classical and Hellenistic Periods

Between 409 and 405 BCE, the Carthaginians invaded Sicily for the second time, taking and sacking several Greek cities, namely Selinous, Himera, Akragas, Gela, and Kamarina. According to literary sources, in some cases,

the Carthaginians avoided destroying temples (Selinous), but in others, after plundering them, they did not hesitate to set them on fire (Himera, Akragas). The effects of the Carthaginian invasion on the temples of the conquered cities still await systematic investigation, but the more far-reaching impact on temple architecture was the military and political instability, depopulation, and economic depression prompted on the island by this traumatic event. In monumental architecture, the interest in fortifications overshadowed temple architecture, and one has to wait until the second half of the fourth century, thanks to the revival in the age of Timoleon (344–337 BCE), for the construction of new houses of the gods. By this time, as best revealed by the Temple of Asklepios at Akragas (10.7×21.7 m) (De Miro 2003) and Temple B at Selinous (4.47×8.58 m) (Marconi 2008), buildings were understated in their size and articulation, in comparison with their predecessors of the Archaic and Classical periods, if one only considers their distyle in antis or prostyle arrangements.

The temples of the Classical period were still an important source of inspiration, as seen in the two engaged half-columns on the back and the interior staircases of the Asklepieion. Nonetheless, the designers of this generation of new temples were interested in innovation, as best indicated by the addition of a podium to Temple B. The reduced investment in new buildings is in part explained by the number of temples already populating many of the sites, which were more than sufficient for the now smaller communities. These buildings must have also required a fair amount of maintenance, and significant interventions are documented in some cases, such as Temple I at Akragas. An exception to this trend towards understatement in temple architecture may be found in Syracuse under Hieron II, who built an Olympieion in the agora, which was admired in some ancient sources (Campagna 2004; Lehmler 2005). The construction of a new temple at Taormina, the only temple on the island of the late Classical and Hellenistic periods surrounded by a colonnade, may provide further testimony of this interest in more monumental forms at the time of Hieron II (Correa Morales 2000: 209–210).

South Italy presents a situation similar to Sicily during this period. Some sanctuaries, such as those of Hera Lacinia and Hera at the Foce del Sele, saw new constructions, including *katagogia*, *hestiatoria*, or stoas. New temples, however, were rare. Leaving aside structures whose dating to this period remains controversial (e.g., at Heraclea and Canosa), particularly notable was the replacement (dating to the early third century) of the early Archaic temple with a stone building within the Sanctuary of Apollo Alaios near Croton (Mertens 1993). The plan of this new structure closely followed that of its predecessor, including the central colonnade, dividing the cella into two aisles. This must have reinforced the sense of antiquity of the cult and the continuity of ritual practice.

This last instance speaks to the significance of the monumental temples of the Archaic and Classical period among the western Greeks, and their role in shaping not only the built environment of sanctuaries but also the experience of the sacred. This made temples into more than simple symbols of wealth and power; instead, they were critical factors of the cultural identity of the communities responsible for their construction.

FURTHER READING

For western Greek architecture in general, the books by Mertens (2006) and Lippolis, Livadiotti, and Rocco (2007) are very useful. See also the studies of individual buildings listed below in the references. For architectural sculpture, see Danner 1997, Ridgway 1999 and Marconi 1994 and 2007; on roof decoration, Mertens-Horn 1988, Winter 1993. For study of social and political considerations that shaped the placement of sanctuaries with the territories of the cities, see the essays in Alcock and Osborne 1994, de Polignac 1995, Malkin 1996, and the essays in Hellström and Alroth 1996.

REFERENCES

Adornato, G., ed. 2010. *Scolpire il marmo: Importazioni, artisti itineranti, scuole artistiche nel Mediterraneo antico*. Milan.

Alcock, S.E. and R. Osborne, eds. 1994. *Placing the Gods: Sanctuaries and Sacred Space in Ancient Greece*. Oxford.

Belli Pasqua, R. 2008. “L’akroterio del frontone occidentale del tempio di Hera Lacinia.” In Stazio and Ceccoli, eds., 445–457.

Belli Pasqua, R. 2009. “Le sculture frontonali del tempio di Hera Lacinia. Un’ipotesi di ricostruzione.” In Mezzetti, ed., 135–156.

Belli Pasqua, R. 2010. “Sculptura architettonica e officine itineranti. Il caso dell’Heraion a Capo Lacinio.” In Adornato, ed., 171–184.

Bonacasa, N. 2005. “Il Tempio della Vittoria a Himera.” In Minà, ed., 58–59.

Burkert, W. 1988. “The Meaning and Function of the Temple in Classical Greece.” In Fox, ed., 27–47.

Caccamo Caltabiano, M., L. Campagna, and A. Pinzone, eds. 2004. *Nuove prospettive della ricerca sulla Sicilia del III a.C. Archeologia, Numismatica, Storia*. Messina.

Campagna, L. 2004. "Architettura e ideologia della basileia a Siracusa nell'età di Ierone II." In Caccamo Caltabiano, Campagna, and Pinzone, eds., 151–189.

Carlino, A., ed. 2009. *La Sicilia e il grand tour: la riscoperta di Akragas, 1700–1800*. Rome.

Carlino, A. 2011. "Tutela e conservazione dei monumenti agrigentini (1779–1803)." *Sicilia Antiqua* 8: 101–142.

Ciurcina, C. 2011. "Terrecotte architettoniche e figurate nel Museo Paolo Orsi: osservazioni ed aggiornamenti." In Lulof and Rescigno, eds., 407–416. Oxford.

Cometa, M. 1999. *Il romanzo dell'architettura: La Sicilia e il Grand Tour nell'età di Goethe*. Rome.

Correa Morales, I. 2000. "Note sull'architettura templare del IV e III sec. A.C. in Sicilia." *NAC* 29: 191–223.

Costabile, F. 1995. "Le statue frontonali del tempio di Marasà a Locri Epizefiri." *MDAI(R)* 102: 9–62.

Crotone e la sua storia tra IV e III secolo a.C. 1993. Naples.

Danner, P. 1996. *Westgriechische Firstantefixe und Reiterkalyptere*. Mainz.

Danner, P. 1997. *Westgriechische Akrotere*. Mainz.

Danner, P. 2000. "Westgriechische Giebeldekorationen, 1. Gorgoneia." *Römische historische Mitteilungen* 42: 19–105.

Danner, P. 2001. "Westgriechische Giebeldekorationen, 2. Mythologische Szenen, sonstige figürliche Motive, nichtfigürliche Ornamente." *Römische historische Mitteilungen* 43: 17–144.

De Angelis, F. 2005. "L'Elena di Zeusi a Capo Lacinio. Aneddoti e storia." *Atti dell'Accademia nazionale dei Lincei*: 151–200.

De Miro, E. 2003. *Agrigento, 2: I santuari extraurbani. L'Asklepieion*. Soveria Mannelli.

De Polignac, F. 1995. *Cults, Territory, and the Origins of the Greek City-State*. Translated by J. Lloyd. Chicago.

De Seta, C. 2011. *Il fascino dell'Italia nell'età moderna: dal Rinascimento al Grand Tour*. Milan.

Edlund-Berry, I., G. Greco, and J. Kenfield, eds. 2006. *Deliciae fictiles*

III: *Architectural Terracottas in Ancient Italy, New Discoveries and Interpretations*. Oxford.

Einicke, R., et al., eds. 2009. *Zurück zum Gegenstand: Festschrift für Andreas E. Furtwängler*. Langenweissbach.

Fox, M.V., ed. 1988. *Temple in Society*. Winona Lake

Gabba, E. and G. Vallet, eds. 1980. *La Sicilia antica*. Naples.

Gasparri, L. 2011. “Ἱμεραῖα ἐξαιρετά. Figure femminili sul tetto del Tempio B.” In Lulof and Rescigno, eds., 487–502.

Greco, G., J. de La Genière, R. Donnaruma, and B. Ferrara. 2010. “Recherches récentes dans le sanctuaire d’Héra au Sele.” *MMAI*, 88: 29–82.

Gruben, G. [1966] 2001. *Griechische Tempel und Heiligtümer*. 5th ed. München.

Gullini, G. 1983. “Urbanistica e architettura.” In Pugliese Carratelli et al., eds., 205–328.

Heiden, J. 1998. “Zum frühklassischen Athenatempel von Gela.” *MDAI(R)*, 105: 329–340.

Hellmann, M.-C., P. Fraisse, and M.-L. Cazalas, eds. 1982. *Paris–Rome–Athènes: Le voyage en Grèce des architectes français aux XIXe et XXe siècles*. Paris.

Hellström, P. and B. Alroth, eds. 1996. *Religion and Power in the Ancient Greek World*. Uppsala.

Hittorff, J.I. and K.L.W. Zanth. 1870. *Architecture antique de la Sicile*. Paris.

Höcker, C. 1993. *Planung und Konzeption der klassischen Ringhallentempel von Agrigent*. Frankfurt.

Hollinshead, M.B. 1999. “Adyton, Opisthodomos, and the Inner Room of the Greek Temple.” *Hesperia*, 68: 189–218.

Junker, K. 2003. “Die Relieftmetopen des Heratempels in Selinunt. Mythoskritik und der Wandel des Sagenbildes im fünften vorchristlichen Jahrhundert.” *MDAI(R)*, 110: 227–261.

Koldewey, R. and O. Puchstein. 1899. *Die griechischen Tempel in Unteritalien und Sicilien*. Berlin.

Lazzarini, L., ed. 2010. *Il Tempio di Hera (Tavole Palatine) di*

Metaponto: Archeologia, archeometria, conservazione. Pisa.

Lehmler, C. 2005. *Syrakus unter Agathokles und Hieron II*. Frankfurt.

Lippolis, E., M. Livadiotti, and G. Rocco. 2007. *Architettura greca: Storia e monumenti del mondo della polis dalle origini al V secolo*. Milan.

Lulof, P. and C. Rescigno, eds. 2011. *Deliciae Fictiles IV*. Oxford.

Malkin, I. 1996. "Territorial Domination and the Greek Sanctuary." In Hellström and Alroth, eds., 75–81.

Marconi, C. 1994. *Selinunte: Le metope dell'Heraion*. Modena.

Marconi, C. 1995. "Due studi sulle metope figurate dei templi 'C' e 'F' di Selinunte." *Rivista dell'Istituto nazionale d'archeologia e storia dell'arte*, 18: 5–67.

Marconi, C. 1997. "I Titani e Zeus Olimpio. Sugli Atlanti dell'Olympieion di Agrigento." *Prospettiva*, 87–88: 2–13.

Marconi, C. 2007. *Temple Decoration and Cultural Identity in the Archaic Greek World: The Metopes of Selinus*. New York.

Marconi, C. 2008. "Il tempio B di Selinunte: Hittorff, Serradifalco e la disputa sulla policromia dell'architettura greca nell'Ottocento." *Sicilia Antiqua*, 4: 59–91.

Martin, R., P. Pelagatti, G. Vallet, and G. Voza. 1980. "Le strutture urbane e il loro rapporto con la storia." In Gabba and Vallet, eds., 235–269.

Mertens, D. 1993. "Per l'architettura nel primo ellenismo: Il tempio ed il santuario di Apollo Aleo a Cirò." In *Crotone e la sua storia tra IV e III secolo a.C.*, 61–80.

Mertens, D. 2006. *Städte und Bauten der Westgriechen*. Munich.

Mertens-Horn, M. 1988. *Die Löwenkopf-Wasserspeier des griechischen Westens im 6. und 5. Jahrhundert v. Chr.* Mainz.

Mertens-Horn, M. 1992. "Die archaischen Baufriese aus Metapont." *MDAI(R)*, 99: 1–122.

Mezzetti, C., ed. 2009. *Il santuario di Hera al Capo Lacinio: L'analisi della forma, il restauro, la ricerca archeologica*. Rome.

Miles, M.M. 1998–1999. "Interior Staircases in Western Greek Temples." *MAAR*, 43–44: 1–26.

Minà, P., ed. 2005. *Urbanistica e architettura nella Sicilia Greca*. Palermo.

Osanna, M. 2011. "La sfinge di Torre di Satriano e il suo contesto architettonico." In Lulof and Rescigno, eds., 351–358.

Østby, E. 2009. "The Relief Metopes from Selinus: Programs and Messages." In Schultz and von den Hoff, eds, 154–173.

Parra, M.C. 2010. "Marmi Kauloniati, un contributo." In Adornato, ed., 143–158.

Pedley, J.G. 2005. *Sanctuaries and the Sacred in the Ancient Greek World*. New York.

Pflug, H. 2006. "Bemalte Terrakottaplatten aus Naxos." In Edlund-Berry Greco, and Kenfield, eds., 452–472.

Pugliese Carratelli, G., *et al.*, eds. 1983. *Megale Hellàs: storia e civiltà della Magna Grecia*. Milan.

Ridgway, B.S. 1993. *The Archaic Style in Greek Sculpture*. 2nd ed. Chicago.

Ridgway, B.S. 1999. *Prayers in Stone: Greek Architectural Sculpture ca. 600–100 B.C.E.* Berkeley.

Rocco, G. 2008. "Architettura protoclassica occidentale e influssi della madrepatria." In Stazio and Ceccoli, eds, 287–324.

Rocco, G. 2009. "Il tempio di Hera al Capo Lacinio: Nuove acquisizioni ed elementi per una sua restituzione." In Mezzetti, ed., 107–134.

Rocco, G. 2010. "Il ruolo delle officine itineranti cicladiche nella trasmissione di modelli architettonici tra tardoarcaismo e protoclassicismo." In Adornato, ed., 159–169.

Schultz, P. and R. von den Hoff, eds. 2009. *Structure, Image, Ornament: Architectural Sculpture in the Greek World*. Oxford.

Sonntagbauer, W. 2009. "Zur Genese des klassischen Tempelentwurfes: Zu den Grundrissen der Tavole Palatine in Metapont, des Athenatempels in Paestum, des Aphaiatempels und des Älteren Poseidontempels in Sunion." In Einicke *et al.* eds., I: 37–49.

Stazio, A. and S. Ceccoli, eds. 2008. *Atene e la Magna Grecia dall'età arcaica all'ellenismo*. Atti del quarantasettesimo convegno di studi sulla Magna Grecia. Taranto 27–30 settembre 2007, 445–448. Taranto.

Thalmann, S.K. 1976. "The 'Adyton' in the Greek Temples of South Italy and Sicily." PhD dissertation, University of California, Berkeley.

Vonderstein, M. 2000. "Das Olympieion von Akragas. Orientalische Bauformen an einem griechischen Siegestempel?" *JDAI*, 115: 37–77.

White, D. 2011. "Akragas's Temple Ridge Defensive Wall and Its Relationship to the Temples: an Archaeological Riddle." *Mare Internum*, 3: 25–34.

Wilton, A. and I. Bignamini, eds. 1996. *Grand Tour: The Lure of Italy in the Eighteenth Century*. London.

Winter, N.A. 1993. *Greek Architectural Terracottas: From the Prehistoric to the End of the Archaic Period*. Oxford.

Zoppi, C. 2009. "Il tempio M di Selinunte, la fonte della Gaggera e la ninfa Eurymedousa." *Sicilia Antiqua*, 6: 57–70.

Zoppi, C. 2010. "Un nuovo fregio dorico e un frammento di "grande sima" dall'area del tempio della Vittoria a Imera." *Sicilia Antiqua*, 7: 9–15.

CHAPTER 7

The Use of Geometry by Ancient Greek Architects

Rocco Leonardis

Geometry in Greece

The development of practical and theoretical geometry by the ancient Greeks was a significant cultural accomplishment, and it proved critical for the evolution of Greek architecture. Interest in geometry in Greece may be divided into three phases. The earliest phase emphasized philosophical and religious applications, such as the speculations of two pre-Socratic philosophers who used geometric models to articulate their views of the cosmos, Thales of Miletos and Anaximander of Miletos, both of them active in the first half of the sixth century BCE. The second phase was centered in Hellenistic Alexandria, where the most important compiler, Euclid, was active in the third century BCE. Our existing corpus of writing about geometry has been preserved from this period. The third phase of exploration of geometry took place in the late Hellenistic period, when Archimedes of Syracuse and Apollonius of Perga were prominent among geometers; this period also was remarkable for practical developments in mechanics and engineering (Heath 1921: I.345–348, II. 346–352, Thomas 1941). The text of Vitruvius illustrates the wide range of interests of such authors; although he regarded himself as an architect and a designer, Vitruvius was, as we would define the role, an engineer (Rowland and Howe 1999: 21). He wrote his still-preserved treatise, *De architectura*, about 20 BCE and dedicated it to the emperor Augustus.

The development of early Greek geometry took place concurrently with several significant cultural events in the seventh century BCE. The reign of Psammetichus I (664–610 BCE) marked the beginning of increased contact between Greeks and Egyptians (Hahn 2001: 66–69). During the reign of Amasis (570–526 BCE), Cyprus fell first under Egyptian rule, then that of the Assyrians. The capture of the city of Sardis by Persia in 547/6 BCE opened a direct link between the Greek world, Persia, and India (Burkert 2004: 49–55, 70–74). Thales observed the solar eclipse of 585 BCE, and his book on the cosmos is datable to 547 BCE. Although individuals such as Thales and, later, Pythagoras (circa 550–495 BCE) could have traveled to Egypt and Babylon to gain specialized knowledge, the geometry that existed in Egypt and Babylon was not the philosophical geometry of the pre-Socratics; instead, it featured

pragmatic solutions for calculating areas, needed because of the ever-changing topography due to the annual flooding of the Nile (Heath 1921: 122–126). The Egyptian Rhind Mathematical papyrus documents the interest in area calculations. But the calculations included inaccuracies and approximations, and the level of accuracy was not what we would accept today.

Yet the Greeks did not have to go far to meet Egyptians or Babylonians as these people were coming to them. It is no coincidence that the early Greek geometers Thales and Anaximander were from Ionia and that, in the following generation, Pythagoras was originally from Samos, just off the Ionian coast. The Archaic period saw Greek construction of temples entirely of stone, and on a very large scale in Ionia (see [Chapter 5](#)). Relationships between Egyptian stone architecture and the Greek are well known, as are the relationships between Egyptian and Greek sculpture. It is self-evident that along with the transference of skills and tools would have come the transference of procedures and process. In their architecture, the Egyptians used columns composed of drums, as well as those that were monolithic. Rough blocks were set in place and then finished; the Greeks copied this process. The Egyptian drums were sometimes fluted or multifaceted, and, although the fluted type was not as popular those that employed plant forms, they were used continuously from the Old Kingdom through the New Kingdom, into the XVIII Dynasty (circa 3000–1300 BCE). Column drums were apparently so well known during this time that Anaximander metaphorically refers to a column drum as part of his theoretical model of the cosmos (Coulton 1977: 49, Hahn 2001: 150–161).

Robert Hahn makes an extensive effort to demonstrate the value of Egyptian drawing techniques, asserting that the Egyptian ability to draw orthographically on papyrus, when passed on to the Greeks, contributed to the development of pre-Socratic thought (Hahn 2001: 97–120). Anaximander's idea of the cosmos would, in his opinion, require such a visual aid to establish the concept. J.J. Coulton and others have proposed that drawing played little if any role in Greek architectural design, in that *syngraphe* (the verbal specification) and *paradeigma* (the model) would have sufficed (Coulton 1977: 49–54). Yet this still leaves questions of how the paradeigma was designed, and how the syngraphe could have been composed without a drawing. It is in fact most probable that the ancient Greek architects proportioned their temple designs by using simple geometric constructions to determine the basic overall proportions of the building. That drawings were used to communicate design to masons is now well established, thanks to the discovery of drawings etched into the walls of the Temple of Apollo at Didyma by L. Haselberger and other similar drawings elsewhere, typically on architectural blocks left with unfinished surfaces (Haselberger 1983; 1985; 1997; 1999; see also [Chapter 16](#)). Practical geometry was a crucial element in

the earlier step of construction for the process of actual design: estimating position, volume, dimensions, and setting proportions.

Practical Applications in Greek Architectural Design

The interest in the measurement of areas so crucial to the Egyptian tax-system was taken up by Greek natural philosophers and incorporated in their vocabularies as visual models, and eventually, with Pythagoras and his circle, this extended to analysis of music and its ratios and harmonies. But the Greeks also quickly found practical applications for geometrical relationships. Two geometrical “elements” or techniques in particular stand out for practical application, and I shall show here how they contributed to design in Greek architecture, in particular the laying out of the stylobate and elements of the superstructure (for additional applications in architecture, see Miles (1989: 148–149) and Senseney (2011: 104–132)).

The first geometrical technique is doubling the area of a square, a very ancient method found already in Babylonian clay tablets (Wilson Jones 2000b: 90–93). Many centuries later, Plato used this well-known method as a teaching device he puts into the voice of Socrates, the son of a sculptor who is said to have trained as a mason himself. The diagram featured in Plato’s *Meno* (84b–85b) is a simple means of doubling a square by taking the diagonal of a square to create one side of a second square, which will be twice as large in area as the first. In the dialogue (the *locus classicus* for this method), Socrates uses the diagram to expound on the nature of learning and knowledge, and Plato’s use of the diagram in the passage also suggests that an understanding of this basic geometric technique was very familiar and well known, at least among Plato’s audience. The diagram, which I shall call here “Meno’s diagram,” even though it is much older than Plato’s lifetime, proved to be of continuing practical value to Roman architects (Huffman 2005: 360–363; Scott 2006). Vitruvius describes it as a method used by his contemporaries for determining areas, and he refers to an illustration he included that is now lost (Vit. 9.Praef. 4; Rowland and Howe 1999, 107, fig. 110).

The second significant geometrical technique is a proportional ratio, which also has practical uses. This ratio, stated most simply as $A + B$ is to A as A is to B , has also had a very long history of use; it is referred to variously as “ ϕ ” or the “Golden Section” (a term first used in the late Renaissance, even though the ratio was well understood, described and used in classical antiquity. The ratio is an integral part of a theorem, credited in antiquity to Pythagoras but likely to be much older, that facilitates dividing a circle into five or ten parts. It was later codified by Euclid as “cutting a line in extreme and mean ratio,”

his succinct description (*Elements* 2.11, 4.10). One potential application in Greek architecture was dividing the top surface of column drums with radii so as to mark off the 20 flutes that became characteristic of the Doric order in the late Archaic period (see [Figure 7.1](#); for another geometrical method, Miles 1989: 148–149). Another application, discussed later in the chapter, was in the planning of the area of the stylobate of temples. Although the term is post-classical, I shall refer here to this well-known proportion as the “Golden Section,” its long-standing name.

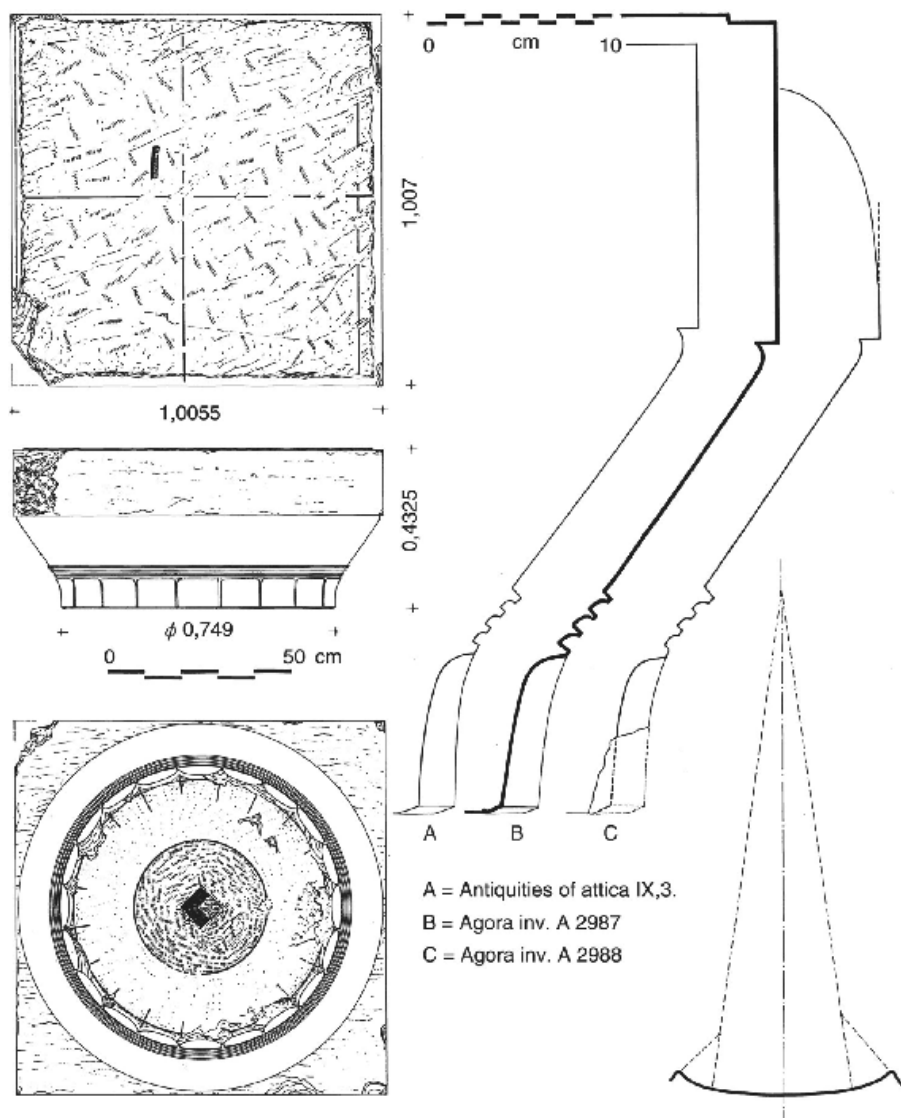


Figure 7.1 Thorikos, Doric capital from the double Stoa, reused in the Athenian Agora, with partial guidelines for flutes preserved on bottom surface. Drawn by Argyris Petronotis. Courtesy American School of Classical Studies at Athens.

The process of using this knowledge geometry in actual construction moved through three stages of application. First, the “footprint,” the width and length of a building, was blocked out in plan. For a temple, this procedure established the integral relationships between the krepidoma, the stylobate, and the various other parts of the structure. The design process was probably accomplished by drawing diagrams. These diagrams were, practically speaking, proportional and assisted in the determination of areas. Additionally, proportions, proportional relationships, and certain numbers may have had other philosophical or religious overtones, about whose precise meanings we can only speculate (Kingsley 1995: 174, 177; Huffman 2005). One practical aspect was that the volume of building material (typically limestone or marble) needed for the building could be estimated properly. We know from financial accounts of the Classical period that one responsibility of the architect was to provide lists of building material to the quarry masters, and this process could be started with a compass and straitedge.

For a temple, a decision would have been made by the architect along with the client (e.g., community representatives, priest or priestess, sculptors, or other patrons) regarding the building width needed to accommodate in the interior the necessary cult furniture and statuary (Plut. *Per.* 13.4; Burford 1969: 154–155; Coulton 1977: 117). Once the overall size of the building was established, a square was drawn using the desired width as the dimension for the length of a side. The process continued by halving the square, using the same diagram featured in Plato’s *Meno* and described by Vitruvius. This geometric work would produce the lengths of the krepidoma and stylobate, as well as other essential dimensions, such as the height of columns and pediment. The relationship between these parts was also established using the “Golden Section.”

The overall height of the structure and other elements, such as the placement of columns and the heights of the pediment, architrave, and entablature, was established by repeating this method, accomplished by the further division of the basic square. These preliminary steps in determining the overall length, width, and height of the structure may have been included in the first phase of the design process, known as *taxis*, rather than forming a separate phase.

The architect was then able to incorporate the various details within this proportioned volume. The project would now become more of a communal or team effort. Masons, sculptors, and other craftsmen would create and submit, for the approval of architect and client, the *anagrapheus* (stencil) and *paradeimata* (model) of individual parts of the building. This would include basic parts, such as triglyphs for Doric buildings, and detailed parts, such as profiles of moldings. The architect’s balancing of all factors in construction would most likely result in slight adjustments of dimensions in order to fulfill the overall proportions that he wanted.

During this process, a grid might be drawn over the plan in a method long used by the Egyptians to scale a drawing. As with their geometrical applications, the grid was a means of controlling areas. It allowed the artist or designer to copy standard or accepted poses for figures and compositions. Scaling a drawing is a convenient method of transferring the drawing from one size to another (Robbins 1994: 26–30). Again, some adjustment might be made by the architect to facilitate the process, further altering the proportions slightly. In Egypt the adjustment was in fact sometimes extended to the physical building site by the use of an actual “plan net” (Hahn 2001: 101). In the third century BCE, Hermogenes may have gone so far as to have his design directed by such a grid (Coulton 1977: 70–71, Senseney 2011: 153–162). A drawing found at Gorab, now in the British Museum, is very instructive on the Egyptian use of the grid. There we see the elevations of an altar, drawn in ink, which is composed of delicate complex curves on a grid yet does not follow the rigidity of the grid. Clearly the grid was not taken as a literal guide by which to design, but a convenient way to transmit it (Clarke and Engelbach 1930: 46–48).

Tools and Drawings

The tools required for the actual drawing were simple. Drawings could be made using charcoal sticks made from grapevines, used widely in the Mediterranean even today as they provide a sharp, hard point. A pair of dividers could be used as a compass. Whitened boards were the likely surface for drawings that needed to be retained for a while. Other design tools borrowed from the Egyptians included papyrus, reed pens, and ink. The Egyptians also wrote on wooden boards covered with gesso, and sometimes covered with linen and then surfaced with gesso, a surface identical to that used by artists during the Renaissance and today. Egyptian architectural drawings – plans and elevations – drawn in ink on papyrus, are preserved. Apparently there was extensive trade in papyrus between Egypt and Greece, but even simple whitened boards could have been used (Casson 1933: 90–99, Robbins 1994).

Wooden builders’ tools, including a measuring rod and a builder’s square, were found in the Ma’agan Mikhael shipwreck dated circa 400 BCE off the coast of Israel (Stieglitz 2006). The ship was carrying marble from Karystos, Euboea, and was probably constructed there; in an analysis of the units of measure on the tools, R. Stieglitz has demonstrated that a variety of “feet” are represented. Another visual depiction of units of measurement is the Salamis relief, which features human arms, hands and a foot (Wilson Jones 2000a).

Once the overall plan was established by means of the two geometrical elements (Meno's diagram and the Golden Section), the necessary materials could be calculated for lists sent to quarries.

There is no doubt that ancient Greek architects used drawings in planning their work, though the nature of their drawings has sometimes been called into question (Coulton 1977: 51–73; Senseney 2011: 32–34). The discovery (noted earlier in the chapter) of incised drawings on the inner walls of the Temple of Apollo at Didyma finally confirmed what had been mostly speculative. The diagrams there are just that: diagrams that are representative of a long, confident tradition of both accurate drawing and geometry (Haselberger 1983, 1985, 1999).

Vitruvius frequently refers to drawings with Greek titles that he and others could use for solving architectural problems. He describes three types of drawings that he calls *ideai*. They are *ichnographia* (the plan), *orthographia* (the elevation), and *scaenographia* (the perspective). The last two, he says, can be shaded or toned to create a realistic illusion (Vitr. *De arch.* 1.2). These traditions of representation stretched back well into the sixth century BCE.

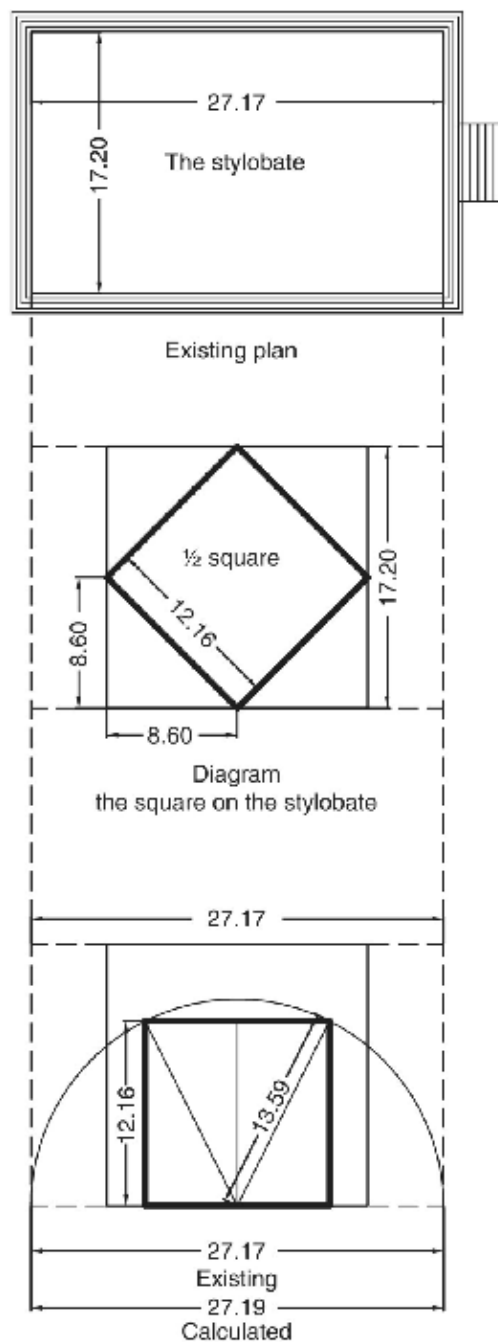
Examples of Geometry in Use

Existing Greek temples may be analyzed to illustrate the process of geometric planning. The Temple of Hera at Olympia, constructed circa 580 BCE, is an early example. The temple was constructed of wood and mudbrick on a limestone platform and with limestone orthostates to support the mudbrick walls of the cella. Although it retained its wooden superstructure and mudbrick walls by the time of Pausanias' visit during the second century CE, all but one of the wooden columns had been replaced by stone supports (or, the wooden column itself might have been a replacement – see [Chapter 2](#)). The building marks an early step in gradual, confident use of stone in construction; it may have had a wooden architrave, possibly even a wooden course approximating the frieze, but shortly after it was built, other temples would be built with elevations entirely of stone, with wood used in ceilings and to support the roof (Curtis and Adler 1897; Lippolis, Livadiotti, and Rocco 2007: 654–55; see [Chapter 8](#)).

The geometric planning process was accomplished by drawing. The first step was to determine the width of the stylobate; then, Meno's diagram would be employed to determine graphically the half-size square. The length of the stylobate will be the sum of the half square and two full squares. For temples with a peristyle, the columns had to be placed precisely within the rectangle of the stylobate; Coulton comments on the dimensional irregularities in the spacing of the columns of the Temple of Hera at Olympia (Coulton 1977: 46).

Builders of the temple tolerated such dimensional inconsistencies, but overall the shift to stonework brought with it a new need for more accuracy in setting and laying the blocks.

The stylobate of the Archaic temple at Pompeii, circa 510–500 BCE, illustrates the development of this process (D’Alessio 2001: pl. 4). After determining the width of the stylobate – again by drawing – the architect determined the half square and then used the “Pythagorean” theorem derived from the Golden Section ([Figure 7.2](#)). In this temple at Pompeii, the length of the stylobate matches accurately within two calculated centimeters the dimensions called for by the geometric diagrams.

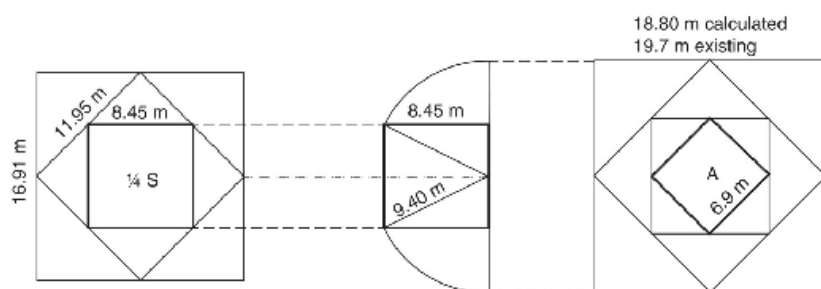


Using the Golden Section on the $\frac{1}{2}$ square, a root-5 rectangle or double-square is formed representing the stylobate.

Figure 7.2 Temple of Athena, Pompeii, diagram of design process. Drawing by Rocco Leonardis.

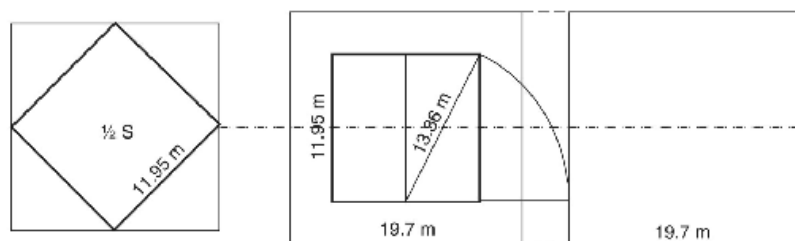
The application of the *Meno* diagram and Golden Section was a deliberate and practical use of the understanding of geometry; it was not speculative. The division of the square by halves is sometimes referred to as the “Pythagorean Octave,” and the use of the Golden Section was also Pythagorean in that, as Sir Thomas Heath has observed, it can be used to construct a pentagram, the Pythagorean symbol of recognition (Heath 1908: 403). A pentagram may be created easily, first by drawing two overlapping circles in such a way that the centers of each circle are on the outer perimeter of the other, a figure called a *vesica piscis* (literally, “fish’s bladder”). With a simple straight edge and compass, a 90-degree angle can be built up from a *vesica piscis* into a pentagon, all interrelated through the use of straight lines and circles (Leonardis 2003: 114). In Greek architecture, the pentagram proved to be a useful figure, because it can be subdivided easily into 20 parts, and could be applied to the bottom surfaces of drums to lay out the 20 flutes of Doric columns.

By the mid-fifth century BCE, the process of design seems to have been made almost into a formula. A comparison of two temples in Sicily illustrates this. The plan of the Temple of Concord at Akragas (circa 450 BCE) and the Unfinished Temple at Segesta (circa 420 BCE) demonstrates a similar, deliberate design process, a procedure that was repeated with some variations over time. [Figure 7.3](#) and [Figure 7.4](#) provide a step-by-step illustration of how this was done for the two temples. The two western Greek temples are very similar in their plans (Mertens 1984). The similarities seen in the taxis phase of design are striking, suggesting that both may have been the work of the same school of designers. These temples demonstrate a straightforward development of the somewhat simple proportioning seen in the much earlier Temple of Hera at Olympia. Using Plato’s *Meno* diagram, for the temple at Segesta a square was drawn on the width of the krepidoma ([Figure 7.4](#)). Using the diagram, it was determined that the square was one half of that square. The length of a side of that square is then equal to the height of the pediment. This same process may be applied to the Temple of Concord ([Figure 7.3](#)).



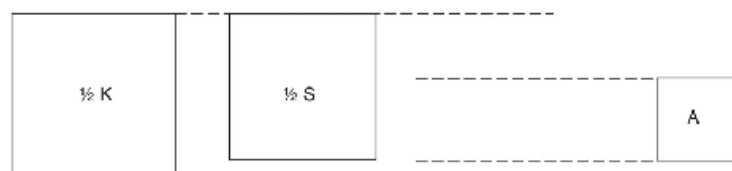
The $\frac{1}{4}$ square on the stylobate.

The width of the krepidoma is determined by the use of the Golden Section on the $\frac{1}{4}$ square on the stylobate.



The $\frac{1}{2}$ square on the stylobate.

42.91 m calculated
42.0 m existing
Length of the krepidoma

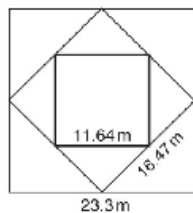


13.93 m calculated
14.0 m existing
Height to peak of
pediment
from bottom of krepidoma

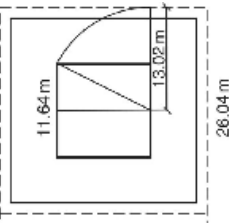
11.95 m calculated
11.9 m existing
Height to peak of pediment
from top of stylobate

6.9 m calculated
6.8 m existing
column + capital
(same procedure as Segesta)

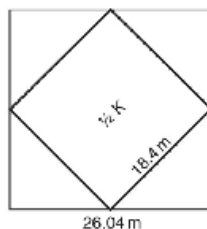
Figure 7.3 Temple of Concord, Akragas, diagram of design process. Drawing by Rocco Leonardis.



Divisions of the square on the stylobate.



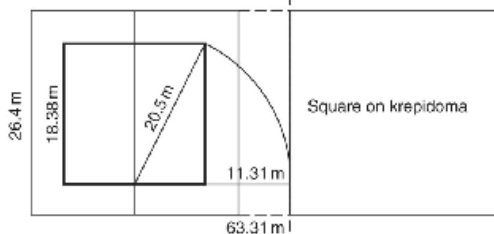
In drawing the Golden Section as shown by Euclid on the $\frac{1}{2}$ square on the stylobate, the perimeter of the krepidoma can be determined.



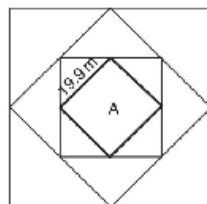
The $\frac{1}{2}$ square on the krepidoma

The length on the krepidoma
63.31 m calculated
60.5 m as built

The length on the stylobate
57.8 m calculated
58 m as built



The $\frac{1}{2}$ square on the krepidoma centered as shown. Draw the Golden Section as shown in Euclid, and this will indicate the location of an additional square, the sum of these three elements produce the length of the krepidoma.



Further divisions of the square on the krepidoma



Height from bottom of krepidoma to the peak of the pediment
18.4 m calculated
18.2 m as built



From the top of the stylobate to the peak of the pediment
16.47 m calculated
16.3 m as built



Elevation



Height from column plus capital
9.19 m as calculated
9.3 m as built
(same procedure as with the Temple of Concord)

Figure 7.4 Unfinished Temple, Segesta, diagram of design process. Drawing by Rocco Leonardis.

The Unfinished Temple at Segesta offers further insight into the temple design process. Only the krepidoma, stylobate, and outer ring of columns and pediments were actually constructed, even though the inner building was planned, and some of its foundations laid. Simply speaking, in the building process, the footprint and the overall volume were constructed first. This corresponds to the design process in which the krepidoma and stylobate are determined first, along with the overall height of the structure, followed by the other architectural details. There were no walls to incise or draw upon, as at Didyma, therefore the *entasis* and other proportions would have had to be drawn elsewhere, probably on some portable material such as drawing boards

or papyrus.

The Parthenon and the Temple of Apollo at Bassai—traditionally both attributed to Iktinos—are similar to each other in the way that the geometry is laid out, and each has some resemblance to the Temple of Concord at Akragas and the Unfinished Temple at Segesta ([Figure 7.5](#) and [Figure 7.6](#); Korres 1983; Cooper 1992). Although not a temple, the Propylon of Demeter Malophoros in Selinous is part of a sanctuary, with full Doric façades, and it is certainly a carefully designed building. Unusually for a gateway, it is square in plan. Only the architect, and possibly the priestess or priest, would have known that it is 27 Doric-feet square, a Pythagorean number. The architect would have begun the process of design by determining the half square from Plato's diagram, the side of which is equal to the width of the passage. In the latest reconstruction of the elevation, the restored overall height of the structure is the same as the side of the half square (Miles 1998).

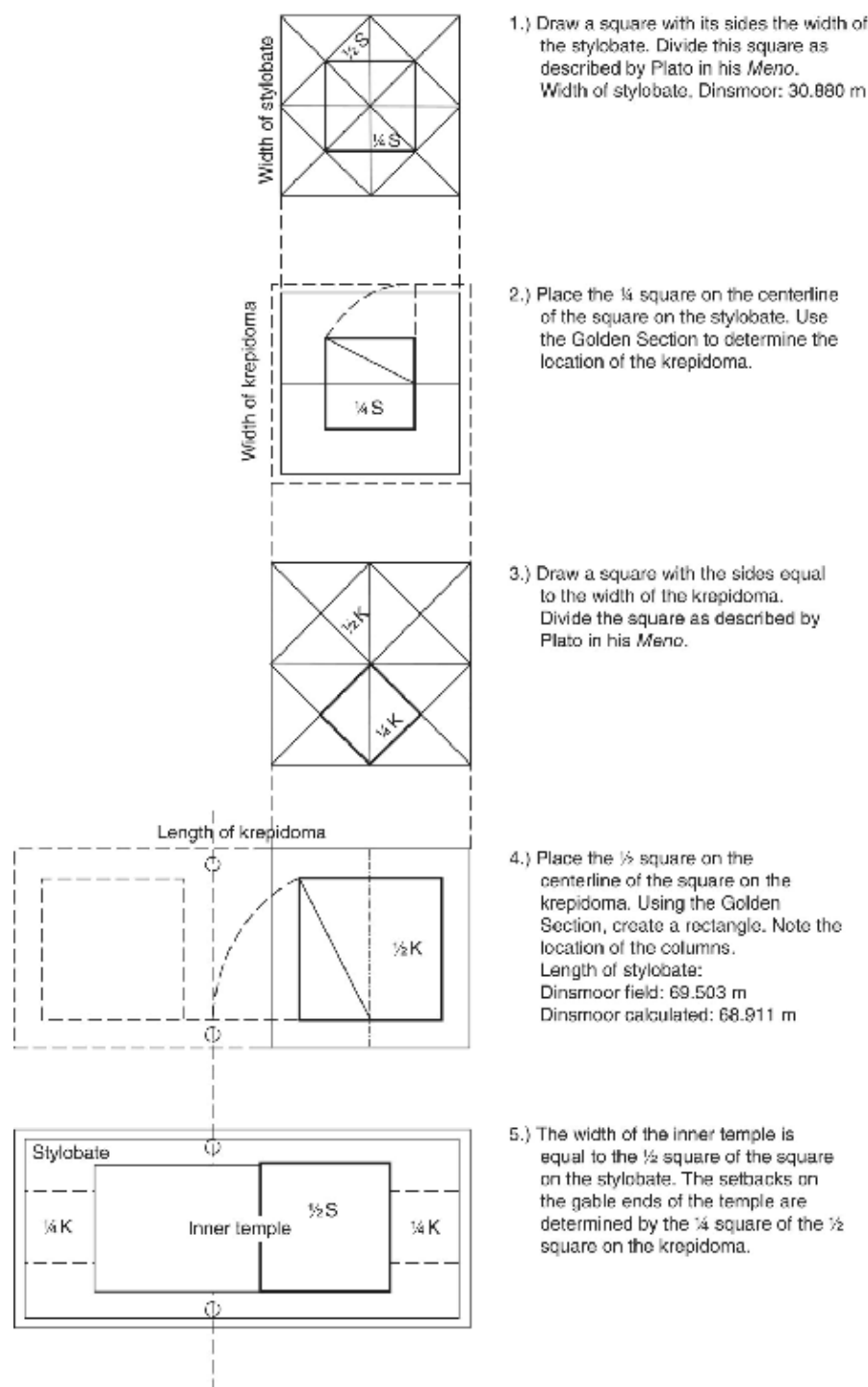


Figure 7.5 The Parthenon, diagram of design process. Drawing by Rocco Leonardis.

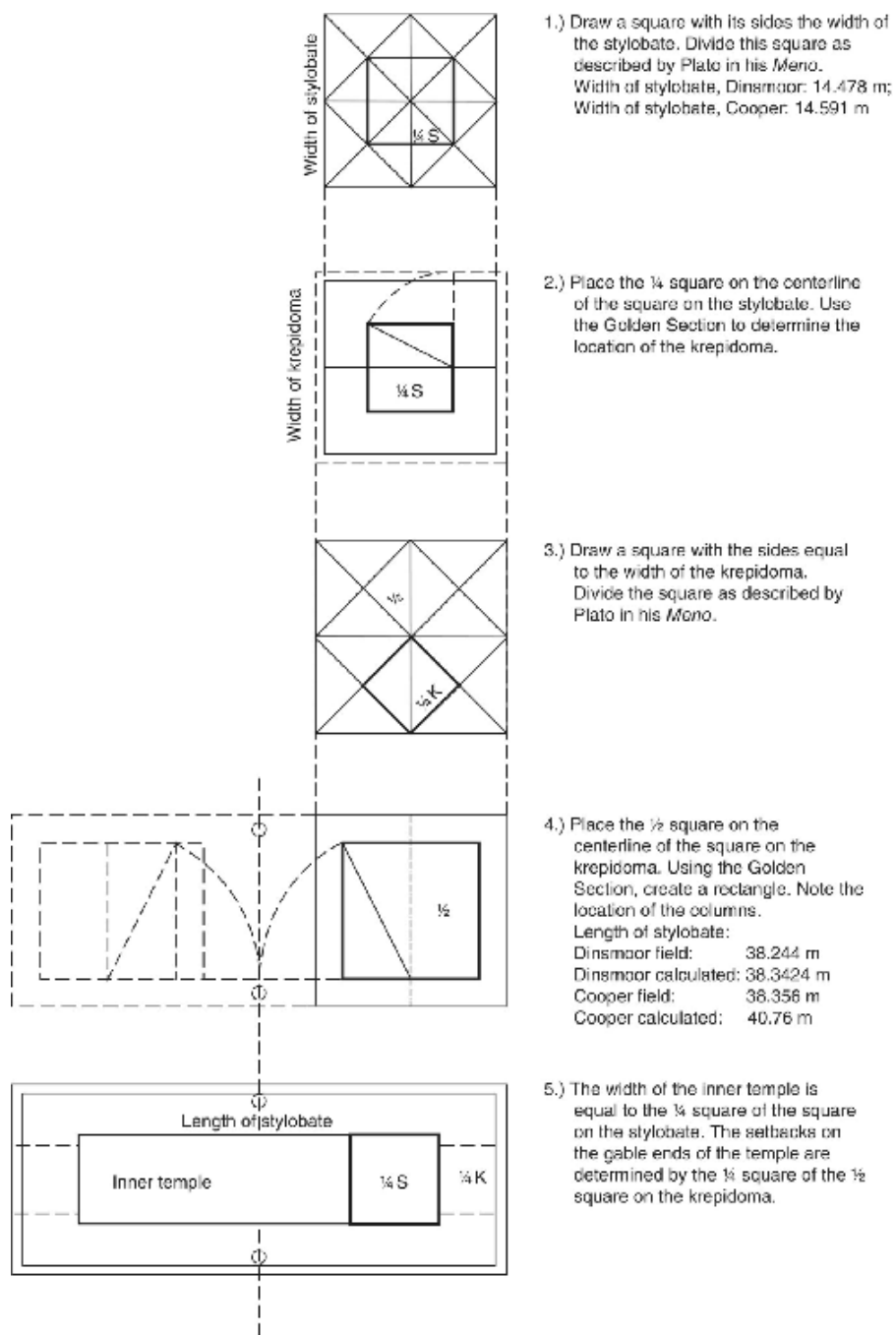


Figure 7.6 Temple of Apollo, Bassai, diagram of design process. Drawing by Rocco Leonardis.

In his text, Vitruvius employs Latin equivalents of Greek terms to describe the different phases of design. He includes these procedures in separate passages and therefore some descriptions appear to be unrelated but they actually do

interrelate and support each other. His chapter on temple design begins with a discussion of the human body, in which he compares a well-proportioned body to a well-proportioned temple (Vitruv. *De arch.* 3.2–3). As with his description of the proportioning of temples, Vitruvius lists numerous rule-of-thumb relationships between different body parts. When representing the human form, the height of a well-proportioned individual needs to be determined first, he says, and then the various parts can be subtended. To hold all of these together, the body should fit, arms outstretched, within a circle or square. The height is therefore decided first, the width second. This use of a simple geometric form will make harmonious the height of the figure to the width of the outstretched arms (Rowland and Howe 1999, figs. 37, 38).

Vitruvius' Use of the Greek Tradition of Applied Geometry

Vitruvius' narrative of the process of design, which is the only surviving description of a design process also used by ancient Greek architects, appears in his description of Greek and Roman theaters (Vitr. *De arch.* 5.7.1–2). The process for designing both Greek and Roman theaters began with the application of a simple geometrical form to the plan. The plan of the Roman theater, as with that of the Greek, called first for an analysis of the functional requirements of the orchestra to determine its diameter. In the Roman theater, four triangles with equal sides are arranged in plan within the circle. This process could be accomplished only by means of a preliminary drawing. The positioning of these triangles determines the locations of the functional planning of the theater's interior. The Greek theater is planned with the placement of three squares in plan within the predetermined circle. It is of interest that the triangles here have equal sides and, of course, so does a square (Rowland and Howe 1999, fig. 83, 84).

This rotated-square pattern potentially had a symbolic (religious) meaning beyond the diagram. Whether the ancient Greeks intended their choice of geometric diagrams to impart meaning, we do not presently know (Senseney 2011: 65–77). Yet this rosette-like diagram has had a long and meaningful subsequent life: in antiquity, roses were associated with the goddess Isis (Apul. *Met.* 11.1–6); in the Gothic period the rosette becomes the pattern for the Rose Window, Trefoils and Quadrefoils; the rose is also associated with the Virgin Mary, as is the *vesica piscis* (Ackerman 1949).

In temple design, the geometric form usually begins with a square, and, as with Vitruvius' description of using a square in proportioning the human body, this step establishes a significant dimension; for temples, it is the width. In contrast to the geometric procedure he uses to describe theater design,

however, Vitruvius approaches temple design with a register of titles, definitions, and proportional recipes.

The design and completion of a building project, now and in ancient times, is a process that includes many people with seemingly similar but actually very different skills. Some, such as the designer, can work alone; others, for example those involved in site management or contract negotiations, may operate in concert with several people, and the construction teams of carpenters and masons will include scores of individuals. There are three major areas of decision-making. First, design problems are solved by drawings and models. Second, inventory questions of “how much or how many” are described in written lists. Third, control of the physical construction at the site is accomplished with samples and models (see [Chapter 8](#)).

Fundamentally, architecture involves a creative side as well as a technical one in its study and its practice. Individual architects can generally be said to prefer one aspect more than the other. Vitruvius seems to have been the technical type. He does not appear to have been a designer. He introduces himself at the beginning of his book as someone who was in charge of making and repairing artillery; he was also a surveyor. He mentions having designed some large works but says that he never published the designs; clearly they were not built or he would have taken credit for them. He never names anything that he designed. The one project in which he claims to have participated was the construction of the Basilica at Fano. Here he describes his role not as designer but as construction manager, the man who supervised the work. That is, he planned the scheduling of the different building phases and coordinated the various craftsmen and builders; he also monitored the bidding of the different trades and approved the contracts with them. This was, and remains, a function that could be performed by an architect but is often handled by an engineer (Vitr. *De arch.* 5.1; Morgan 1914: 134, Schofield 2009: 122, Rowland and Howe 1999: 64).

Despite all of Vitruvius’ references to famous architects whose books he has read and to his having had six teachers, he does not tell us who his master was or where he was trained. He offers as his design credentials a list of the books he has read. We do not know if he ever designed anything professionally or saw a competent designer at work. His descriptions of the design process are more in the realm of information copied from books than of knowledge attained by practice. This probably explains the differences between his descriptions of geometric and arithmetic design processes (McEwen 1993: 104–106). Often, when copying a style of design, the observer replicates the details perfectly but, as a nonparticipant, cannot copy the spirit of the style. Such is the case with Vitruvius. Hence, he presents us with a roll call of formulas and recipes, all copied down, but slightly out of order and lacking a recognizable unifying design principle.

Classical antiquity saw a glorious blooming of geometric discoveries in philosophy, engineering, and architecture, all arising at the same time and with commingling accomplishments. It should be no wonder, then, that in the demanding process of designing a temple, architects would make use of these already ancient but then newly potent geometric constructions. Through oral tradition, textual transmission, and rediscovery, applied geometry continued to be the customary and primary tool for design in Western medieval and Renaissance architecture (Ackerman 1949, Millon and Lampugni 1997).

FURTHER READING

The text of Vitruvius is crucial reading for many aspects of ancient architecture (Rowland and Howe 1999). The books by Sir Thomas Heath are a mine of useful, still authoritative information (Heath 1908; 1921). On design, Coulton 1977 and Senseney 2011 are essential; for the details of the Parthenon, Korres 1994. On the early origins of the orders and construction techniques, see Barletta 2001 and Wilson Jones 2014.

REFERENCES

- Ackerman, J.K. 1949. “‘Ars Sine Scientia Nihil Est.’ Gothic Theory of Architecture at the Cathedral of Milan.” *Art Bulletin*, 31.2: 84–111.
- Burford, A. 1969. *The Greek Temple Builders at Epidauros: A Social and Economic Study of Building in the Asklepiean Sanctuary, During the Fourth and Third Centuries B.C.* Toronto.
- Burkert, W. 2004. *Babylon Memphis Persepolis: Eastern Contexts of Greek Culture.* Cambridge, MA.
- Casson, S. 1933. *The Technique of Early Greek Sculpture.* Oxford.
- Clarke, S. and R. Engelbach. 1930. *Ancient Egyptian Masonry: The Building Craft.* Oxford.
- Cooper, F.A. 1992. *The Temple of Apollo Bassitas, Vol. II: The Sculpture.* Princeton.
- Coulton, J.J. 1977. *Greek Architects at Work.* Ithaca.
- Curtis, E. and F. Adler. 1897. *Olympia, Die Ergebnisseder von dem Deutschen Reich, Veranstalteten Alsgrabung.* Berlin.
- D’Alessio, M.T. 2001. *Materiali votivi dal foro triangolare di Pompei.* Rome.

Hahn, R. 2001. *Anaximander and the Architects: The Contributions of Egyptian and Greek Architectural Technologies to the Origins of Greek Philosophy*. Albany.

Haselberger, L. 1980. "Werkzeichnungen am Jüngerem Didymeion." *MDAI(I)*, 30: 191–215.

Haselberger, L. 1983. "Bericht über die Arbeit am jüngerem Apollontempel von Didyma." *MDAI(I)*, 33: 90–123.

Haselberger, L. 1985. "The Construction Plans for the Temple of Apollo at Didyma," *Scientific American*, 253 (6): 126–132.

Haselberger, L. 1997. "Architectural Likenesses: Models and Plans of Architecture in Classical Antiquity." *JRA*, 10: 77–94.

Haselberger, L., ed. 1999. *Appearance and Essence: Refinements in Classical Greek Architecture*. Philadelphia.

Heath, T.L. 1908. *The Thirteen Books of Euclid's Elements*. Vol. 1. Cambridge.

Heath, T.L. 1921. *A History of Greek Mathematics*. Vol. I. Oxford.

Huffman, C.A. 2005. *Archytas of Tarentum: Pythagorean, Philosopher and Mathematician King*. Cambridge.

Kingsley, P. 1995. *Ancient Philosophy, Mystery, and Magic: Empedocles and the Pythagorean Tradition*. Oxford.

Korres, M. 1983. *Melete Apokatastaseos Tou Parthenonos*. 3 vols. Athens.

Korres, M. 1994. "The Architecture of the Parthenon." In Tournikiotis, ed., 54–97.

Leonardis, R. 2003. "The Plan of Santa Sofia: A View into Early Medieval Design." *Architectura*, 105–122.

Lippolis, E., M. Livadiotti, and G. Rocco. 2007. *Architettura greca: Storia e monumenti del mondo della polis dalle origini al V secolo*. Milan.

McEwen, I.K. 1993. *Socrates' Ancestor: An Essay on Beginnings*. Cambridge, MA.

Mertens, D. 1984. *Der Tempel von Segesta*. Mainz am Rhein.

Miles, M.M. 1989. "A Reconstruction of the Temple of Nemesis at Rhamnous." *Hesperia*, 58: 131–249.

- Miles, M.M. 1998. "The Propylon to the Sanctuary of Demeter Malophoros at Selinous." *AJA*, 102: 35–57.
- Millon, H.A. and V. Lampugnani, eds. 1997. *The Renaissance from Brunelleschi to Michelangelo*. New York.
- Morgan, M.H. 1914. *Vitruvius, The Ten Books on Architecture*. Cambridge, MA.
- Robbins, D.P. 1994. "Areas of Polygons Inscribed in a Circle." *Discrete & Computational Geometry*, 12 (1): 223–236.
- Rowland, I. and T. Howe. 1999. *Vitruvius: Ten Books on Architecture*. Cambridge.
- Schofield, R. 2009. *Vitruvius, On Architecture*. London.
- Scott, D. 2006. *Plato's Meno*. Cambridge.
- Senseney, John R. 2011. *The Art of Building in the Classical World*. Cambridge.
- Stieglitz, R.R. 2006. "Classical Greek Measures and Builder's Instruments from the Ma'agan Mikhael Shipwreck." *AJA*, 110: 195–203.
- Thomas, I. 1941. *Greek Mathematics*. Vol. II. Cambridge, MA.
- Tournikiotis, P., ed. 1994. *The Parthenon and Its Impact in Modern Times*. Athens.
- Wilson Jones, M. 2000a. "Doric Measure and Architectural Design I: The Evidence of the Relief from Salamis." *AJA*, 104: 73–94.
- Wilson Jones, M. 2000b. *Principles of Roman Architecture*. New Haven.
- Wilson Jones, M. 2014. *Origins of Classical Architecture*. New Haven.

CHAPTER 8

How Buildings Were Constructed

Nancy L. Klein

The peripteral temple appears today as an iconic expression of ancient Greece. Buildings such as the Parthenon, the Temple of Poseidon at Sounion, or those found in the sanctuaries at Delphi, Olympia, and Delos are visited by thousands of tourists each year and are a visible testimony to the Greeks' desire to create permanent, monumental architecture. Developed over several centuries, the language of architectural form and structure has had a profound impact on many other cultures, especially the Romans. Rediscovery of classical architecture in the Renaissance led to a period of emulation and adaptation and, ultimately, the creation of modern Western architecture.

In looking back over thousands of years of architectural history, however, it is clear that the external forms of classical architecture were dependent on both materials and methods of construction. While the Greek world had developed a monumental stone architectural tradition during the Bronze Age, as seen at Mycenaean citadels and Minoan palaces and villas, the demise of these cultures in the late second millennium left no practical legacy for subsequent generations. Visible remains, such as the Lion Gate at Mycenae, might have provided inspiration, but they did not offer practical advice. Most examples of temples or shrines dating between the twelfth and seventh centuries BCE were built of rubble masonry with earth mortar using techniques that are common to vernacular domestic architecture. For the ancient Greeks of the later, historical period, the stimulus to build in stone may have resulted from their own experience of seeing stone architecture in Egypt during the seventh and sixth centuries BCE. Monumental, often megalithic, architecture had been used for sacred buildings, including mortuary complexes and temples, for thousands of years in Egypt. Techniques used to quarry and dress stone and to assemble masonry may thus have been inspired by Egypt, but it seems likely that other factors contributed to the development of a distinctively Greek style.

The use of architectural terracottas in Greece also began in the second half of the seventh century and offered a durable, decorative material with which to roof a building and protect it from intemperate weather (see [Chapter 4](#)). The weight of such a roof, however, was significantly greater than anything used previously and was an additional stimulus to construction in stone (Rhodes 2003: 86–93). By the late seventh century BCE, the first intentionally designed stone architecture appeared in Greece. Extant remains from the early

temples at Corinth and Isthmia display a variety of blocks that were cut to serve specific purposes, although they show little, if any, sign of an emergent architectural order (Rhodes 2003). In the generations that follow, these first efforts to build in stone led to the development of classical architecture.

Literary Sources and Building Inscriptions

Greek and Roman sources offer a variety of viewpoints on the development of classical architectural forms and on technical expertise, ranging from descriptions of a building's appearance and sculptural decoration to the origins of the orders, urban planning, notable engineering accomplishments, patronage, and financial accounting of building expenses. Early achievements in monumental construction were celebrated, and architects who had successfully overcome challenges in engineering construction often wrote an account of their methods that insured their fame. The monumental archaic temples of Hera at Samos and of Artemis at Ephesos are particularly important achievements, as the names of their architects, their engineering inventions, and even personal anecdotes have survived down to the present day (see [Chapter 5](#)). In the sixth century BCE, Theodoros of Samos built the Temple of Hera at Samos and assisted Chersiphron and Metagenes with the Temple of Artemis at Ephesos. Pliny the Elder (*NH* 36.95–97) notes that Theodoros reportedly used a layer of charcoal and fleece to mitigate the effects of groundwater at Ephesos. The same passage recounts the difficulty Chersiphron faced in raising the architrave blocks into position. Although he had built a ramp using baskets full of sand to raise the architraves, and subsequently emptied the baskets to allow the blocks to settle into place, the technique did not initially work for the largest block. Chersiphron contemplated suicide as the block remained out of position, but the goddess herself appeared to him in a dream and offered encouragement and assistance. Divine intervention was made apparent the next morning as the architrave finally had come to rest in its proper position. The details of this event may have come to Pliny in a manuscript written by Chersiphron and his son Metagenes. Chersiphron is also credited with developing the technique of using rollers to move large blocks from the quarry to the building site, although this technique is also known from Egypt (*Vitr. De arch.* 10.2.11).

Other Greek architects wrote treatises on aspects of design or symmetry: the titles of their work are given by Vitruvius (*De arch.* 7.praef.12), who lists a number of Greek architects whose work he knew. Some, such as Silenos, who wrote on Doric symmetry, are otherwise unknown, but many others are credited with some of the most prominent commissions of antiquity. Iktinos

and Karpion wrote about the Parthenon on the Acropolis of Athens, Hermogenes wrote an account of the Temple of Artemis at Magnesia and the Temple of Dionysos at Teos, as did Pytheos for the Temple of Athena at Priene and, with Satyros, the Mausoleum at Halikarnassos, among others (Rowland and Howe 1999: 266). None of the early Greek treatises survive to the present day, but ancient authors, including Vitruvius and Pliny the Elder, were able to read the texts or knew them by reputation. Vitruvius, in his own treatise, *De architectura*, not only lists the name and accomplishments of these great architects but also incorporates their ideas into his own discussion of temple proportions and symmetry.

The construction of a temple was usually undertaken by the sanctuary or administration in charge of the cult, and funds for building a temple could be drawn from several sources, including civic or sacred accounts, gains from successful military campaigns, subscription, and individual patronage. Aristotle tells us that the Athenian Council of 500 was responsible for the building activities of the state (*Ath. Pol.* 46.50), and overseers, *epistatai*, had more specific tasks related to oversight of project finances and inspection of the building. In addition to literary accounts and manuscripts, other sources of information for the construction of ancient monuments include public inscriptions, and building accounts offer specific details about expenditures for quarrying and transport of stone, the amount and value of building materials, and wages for stonecutters and sculptors.

From Athens, we have inscriptions recording the expenditures for the Periclean building program that include the building accounts of the Parthenon from 447–432 BCE (*IG I³* 436–451), the building accounts of the Propylaia from 437–432 BCE (*IG I³* 462–466), the authorization of plans for the Temple of Athena Nike (*IG I³* 35), and the accounts for the completion of the Erechtheion from 409–406 (*IG I³* 474–479), as well as the decrees of Kallias (*IG I³* 52) that discuss the funding of projects, probably dating to the 430s. At Epidauros, a long inscription records the expenses, activities, and individuals involved in the construction of the Temple of Asklepios in the early fourth century BCE (*IG IV²* 102). Burford (1969) offers a translation and thorough analysis of this inscription. The building accounts give a valuable perspective on the financing and progress of work, but we must turn to the buildings themselves to learn more about construction techniques.

Monumental Building Practices

It is useful to ask why it was necessary to build monumental structures at all. Many civilizations around the world and down through time never developed

a tradition of monumental, permanent architecture. But for the Greeks, the desire to do just this is apparent from the seventh century BCE onwards with the creation of a variety of structures, including temples, stoas, civic buildings, theaters, stadia, and baths. Although the importance of monumental sacred architecture to serve the gods was unquestioned, the Greeks also chose to invest in the use of masonry and other permanent materials for buildings that served the needs of a community. The classical orders that first evolved for use in sacred buildings were subsequently employed for civic buildings as well as private monuments and tombs. The development of the orders and the desire to create lasting secular structures distinguishes Greek architecture from that of the Egyptians, the Assyrians, the Persians, and the Etruscans, and it helped inspire the esteem in which classical architecture was held by later civilizations.

Construction Materials

The choice of materials used in Greek architecture was determined by the nature of the building, the financial means of the patron or group paying for its construction, and access to resources. The most common building materials were stone, wood, mudbrick, stucco, terracotta, metals, and paint. The primary building material in monumental Greek architecture is stone, including limestone (often called poros) or marble for the superstructure and other stones for foundations (such as conglomerate). The presence of local stone resources plays a determining factor in the history of construction. On the Greek mainland, limestone is one of the first materials to be systematically quarried in response to the first monumental building projects in the seventh century. In the Corinthia, Rhodes has investigated the techniques used to extract poros limestone blocks from the quarries for the construction of the seventh-century temples at Corinth and Isthmia (Rhodes 1987a, 1987b). By the sixth century BCE, limestone temples are built in many areas of Greece, including Delphi (Old Tholos, Monopteros, Temple of Athena Pronaia); Athens (Hekatompedon, Building A); Aigina (Temple of Aphaia I, Temple of Apollo I); Corfu (Temple of Hera at Mon Repos, Temple of Artemis); Kalydon (Temple A); Kalapodi (South Temple, North Temple); and the Argolid (Argive Heraion). In early sixth-century Sicily and South Italy, monumental limestone temples were built at Syracuse (Temple of Apollo); Foce del Sele (Temple of Hera I); Selinous (Temple E1, Temple C); and at Paestum ("Basilica"). In the Cyclades, local marble was first used in the seventh-century temples on Naxos (Temple of Dionysos at Yria, circa 680 BCE) and continued as the primary building material throughout the sixth century for temples on Delos (Oikos of the Naxians); Naxos (fourth Temple of Dionysos at Yria); Samos (Rhoikos Temple of Hera); and at Ephesos

(Temple of Artemis). Cycladic marble was also exported to the mainland during the Archaic period for a variety of uses, including freestanding sculpture and roof tiles (Ohnesorg 1993: 13–17).

Wood was used for a variety of purposes in Greek architecture. In the seventh-century temples at Corinth, Isthmia, and Nemea, wooden timbers were integrated into the stone walls (Rhodes 2003: 85–93). These temples have also preserved some of the earliest architectural elements from buildings with a terracotta roof and provide evidence for the theory that the desire to use a terracotta roofing system may have created the stimulus to build in stone, since the weight of the tiles requires the support of a substantial building. The Temple of Hera at Olympia (early sixth century BCE) offers visible evidence of how stone, wood, and mudbrick were combined to build the superstructure. As preserved today, the stone toichobate has a rough finish on its upper surface, indicating that the walls were made of mudbrick rather than stone. Nonetheless, this temple was covered by a terracotta roofing system that has its origins in Laconia and is among the earliest roofs to be found at Olympia (see [Chapter 4](#)). At the ends of the walls, where the mudbrick is most vulnerable to damage, the stone courses were designed to incorporate a wooden sheathing to protect the mudbrick. The Hera temple was originally built with wooden columns for peristyle, porches, and two rows of columns in the cella. Almost all of these were gradually replaced with stone columns, but Pausanias (5.16.1) observed an oak column still standing in the opisthodomos in the second century CE. The entablature of this building may also have been wood. Wooden columns are also suggested by the stylobate cuttings found at Kalapodi and Mycenae (Felsch 2001: 9–15). In Ionic architecture, the Rhoikos Temple of Hera on Samos may have had a capital with wooden volutes (Walter 1990: 121–129; Barletta 2001: 106–107). In all periods, wooden timbers were used to build the roof frame and ceiling of buildings, doors, windows, and other interior furnishings (for roof construction, see Hodge 1960). Additionally, wood was essential for building the equipment and machines needed for the transportation and construction processes, including frames for exceptionally large building blocks, carts or sledges, rollers, scaffolding, and cranes.

Simple sundried mudbrick provided an inexpensive yet durable building material and was used in prehistoric architecture, vernacular buildings, and early temples. As long as it remained dry and solid, it could last for centuries. The Temple of Hera, mentioned above, provides an example of how mudbrick placed on a stone toichobate and protected by wooden sheathing was used even in a prestigious sacred structure. The stone socle would prevent moisture from wicking into the blocks at the bottom, and the surface of the mudbrick was probably plastered with a lime stucco to offer further protection. In the Athenian Agora, South Stoa I (430–420 BCE) provides another example of this technique in its walls (Camp and Dinsmoor 1984: 8, fig. 10).

Terracotta, or fired clay, was also used in a variety of ways. The most significant is in the system of roofing tiles that covered and decorated temples and civic buildings. Roofing systems appear on the Greek mainland and in Italy in the late seventh century (see [Chapter 4](#)). Regional styles with distinctive elements (use of antefixes or simas) and decoration have been identified and must have been one of the most visible outward signs of a building's identity (Winter 1993).

Stucco or lime plaster was employed to protect and embellish the surface of buildings. In the seventh-century Temple of Poseidon at Isthmia (Broneer 1971: 41, fig. 21; Barletta 2001: 49–51), the walls were coated with stucco and painted, perhaps in figural panels, as was the case for later classical buildings such as the Temple of Hephaistos in Athens. In many other examples, a thin coating of stucco was applied to the surface of a coarse stone in order to improve its appearance and texture.

Quarrying and Transportation of Building Materials

The earliest monumental stone buildings on the Greek mainland were built of local limestone. The quality and hardness of limestone can vary greatly, but in general the stone can be extracted from the quarries in large blocks. One of the roles of the architect must have been to develop a strategy to determine the types of blocks required for each stage in the construction process so that the extraction process would supply the proper size and quantity of blocks as they were needed. A protective layer would remain on the block during quarrying and transport to ensure that an unblemished surface would emerge with the proper finished dimensions.

Transportation of blocks from the quarry to the building site was both logistically challenging and financially expensive. Depending on the geographic relationship between the quarry and the sanctuary, transport of stone might be by land, by sea, or a combination of the two. In general, maritime transport was faster and less expensive than overland travel. Blocks were inspected on site and could be rejected if they had been damaged in transport. While they were no longer suitable for the building project, they remained the property of the sanctuary. Extremely large blocks posed a particular challenge, since the typical manner of transportation by wooden cart might not support their weight or size. Vitruvius (*De arch.*10.2.11–12) describes inventions by Chersiphron and Metagenes, the architects of the temple of Artemis at Ephesos, to move the largest blocks, the column drums, and the architrave. Chersiphron created a wooden frame with two long and two short beams encasing a column drum with a pivot inserted into each end of the drum. The pivots were next attached to the frame, to which teams of oxen were then hitched, and the drum rolled along behind them. Metagenes

devised a similar device for moving the architraves, whereby he used pivots inserted into each short end, but the architrave itself served as an axle attached to two large wooden wheels.

Site Preparation and Foundations

Prior to construction, the building site was prepared through leveling or filling. Since monumental buildings are situated in a variety of landscapes, the requirements would have varied according to the topographical challenges. In some cases where the building stands on bedrock, it would be necessary to trim or cut the bedrock to provide a level space. On uneven ground, as is found in the Sanctuary of Apollo at Delphi or the Acropolis of Athens, the bedrock slopes steeply, and it may be necessary to create a terrace supported by a retaining wall or extensive foundations to provide a level basis for the building.

The foundations of a Greek temple typically consist of a leveling course (euthynteria), and a three-step crepis. Quite often the stone used for the lower or interior courses in the foundations, especially those below ground, would be of an inferior quality. The blocks were roughly finished and shaped to provide a stable foundation for the superstructure. It was also common to reuse in the foundations architectural elements from older structures that had been damaged or dismantled. Several examples of this practice are found on the Athenian Acropolis, especially the foundations for the Mnesikleian Propylaia. Older blocks from several structures are visible today beneath the western portico, and many more are used in the foundations of the Pinakothek (Wiegand 1904: 162–166, figs. 147, 148; Dinsmoor and Dinsmoor 2004: 63–65, 217–314). Other examples include the foundation of the Sikyonian Treasury at Delphi (Laroche and Nenna 1990: 240; Bommelaer 1991: 118–123) and at Olympia (Herrmann 1976: 323–325). This practice of reusing older material would have provided a great savings in quarrying and transportation costs and may also have had a symbolic value by establishing the venerable character of the site and its long history.

Wall Construction

The preparation of blocks began with a preliminary dressing on the ground. Workmen carved the block to its appropriate dimensions but would completely finish only the bottom and joining surfaces of the blocks that would abut another block and not be visible. Surfaces that would be visible

usually retained a thin “skin” or protective layer of stone in order to safeguard them as they were raised and levered into position. Joining surfaces would be finished with anathyrosis, a technique that relies on carefully smoothing only a narrow band of stone along the outer edges of a block while roughly picking the remaining surface to a slightly greater depth (Figure 8.1). Anathyrosis allows adjacent blocks to be so closely joined that no separation is visible but it also saved time and labor since most of the surface could be quickly and roughly picked to a greater depth than the smooth outer bands. For most quadratic blocks, smooth bands were created along the two abutting ends and the horizontal surfaces, while column drums would have had a narrow band around the entire circumference of their top and bottom surfaces.

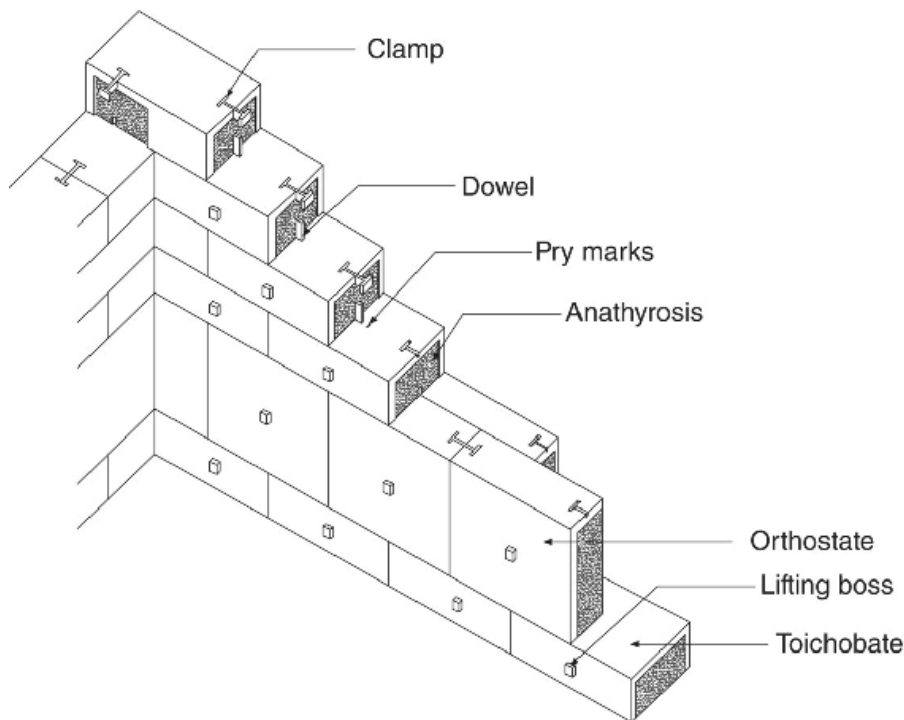


Figure 8.1 Ashlar wall construction.

Source: N. Klein.

The placement of blocks also required planning and preparation. Blocks in the lowest courses of the building could be moved using rollers or carts and maneuvered into position by hand. As the height of building increased, it was necessary to provide a means for raising the blocks into position. Indications of the lifting process are found on many blocks and buildings beginning in the seventh century BCE and hint at the other machines and techniques used to raise and position them (Coulton 1974; for machines, see Vitr. *De arch.*10.1–3). Projecting bosses of stone on opposite sides of a block and U-shaped rope cuttings in the ends of blocks suggest the use of loops of ropes (Figure 8.2).

Other blocks have a specially designed cutting in the top surface, with three vertical sides and one set at an oblique angle, that was intended to receive a metal lewis made of two or three pieces. An angled element was placed into the angled side of the cutting, then a rectangular one to its side. When a rope or hook was passed through loops in both metal pieces and lifted, the shape of the cutting held the two pieces of the lewis in position, and allowed the block to be raised. Small cuttings in the top of ashlar blocks provide a purchase for metal levers or pry bars used to move the blocks in the course above into their final position.



Figure 8.2 Temple of Aphaia II, Aigina, view of interior.

Source: N. Klein.

Wall construction was designed to promote stability but could also provide visual interest (Figure 8.1). A low horizontal course (toichobate) supported upright slabs (orthostates) and courses of regular wall blocks. The size and height of the wall courses could be equal (isodomic masonry) or alternate in height (pseudo-isodomic masonry). The placement of vertical joints was usually staggered to increase the structural stability of the wall. A common

practice for building walls that contributed to their stability was to alternate courses of blocks that passed through the thickness of the wall (headers) with courses of blocks (two or three) running along the length of the wall (stretchers) (Figure 8.3; see Chapter 18). Individual blocks of cut-stone masonry were often joined to one another with metal clamps and dowels in order to provide vertical and horizontal movement, especially in areas that are subject to a combination of directional forces, such as corners and in the upper parts of buildings. This technique was probably learned from Egypt, where the use of dovetail clamps is known from the Old Kingdom period onwards. Egyptian usage differed in many ways from Greek practice, however, since Egyptian masonry was laid in a bed of mortar, and the clamps, which include examples in wood, lead, copper, and stone, may only have been used to keep adjacent blocks in position while the mortar dried (Clarke and Engelbach 1990: 112–113).

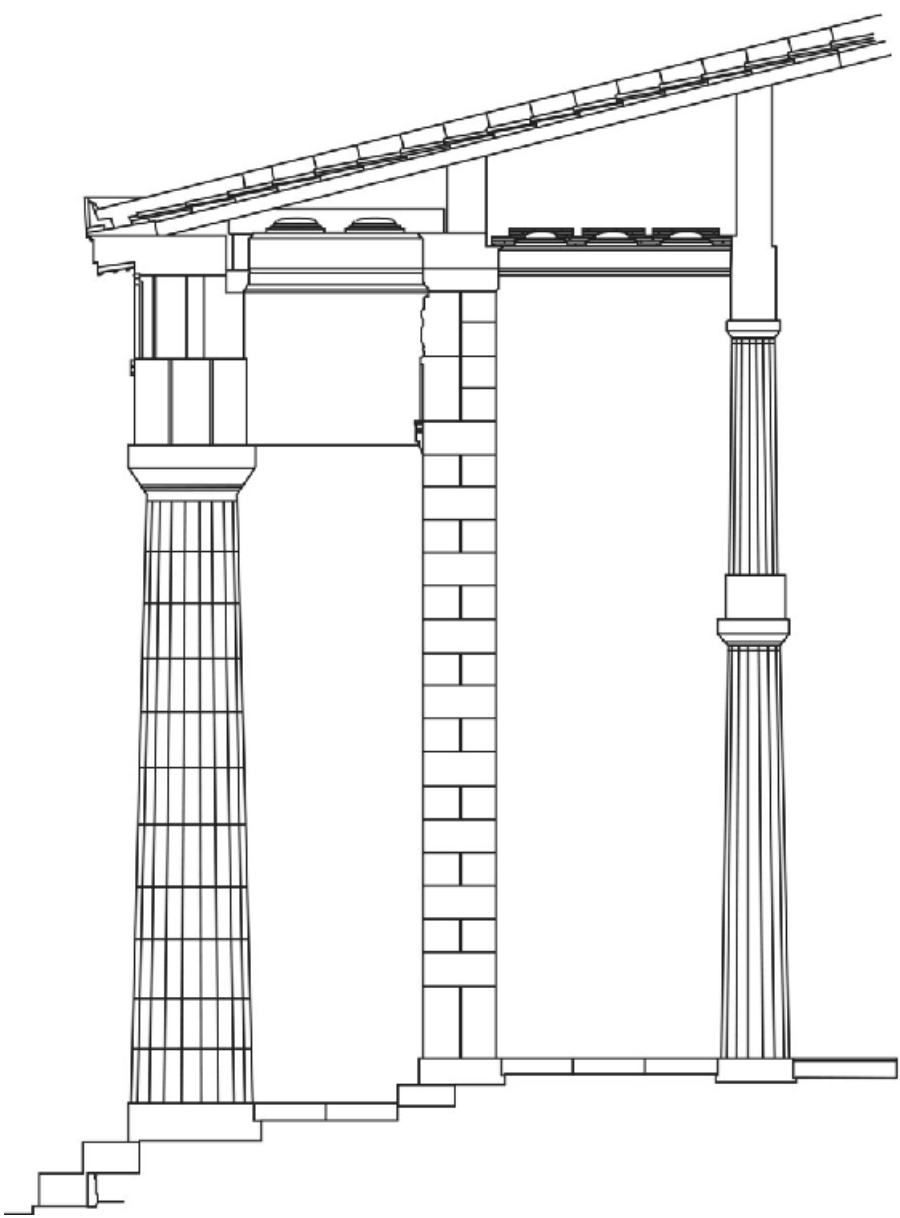


Figure 8.3 The Parthenon, section through interior, cella wall, and colonnade.

Source: N. Klein.

In Greek masonry, once the blocks were placed in a horizontal course of masonry, masons would carve a cutting in the top surface of two adjacent blocks into which an iron clamp would be placed to prevent lateral movement. The swallowtail (or dovetail) clamp is the oldest type to appear in Greek architecture and was probably adopted from Egypt during the seventh century or early sixth century BCE. Other shapes are introduced at different times and places, including Z-clamps, double T-clamps, and pi-shaped clamps (Martin

1965: 238–296, with tables; Orlandos 1966: II.99–122; Hellmann 2002: 93–95). Vertical dowels could also be used to secure two courses of masonry, and embolia were placed in the center of columns drums to ensure that they were properly aligned and could not be easily displaced. The use of clamps and dowels in Greek architecture was not universal, however, as some regions with extremely coarse buildings stones appear to have relied upon friction and gravity to prevent lateral movement of the blocks. In some cases, the coarse texture of the stone may also have rendered difficult the actual carving of clamp cuttings. An example of this from the fourth century BCE, the Temple of Apollo Patroos in the Athenian Agora, has conglomerate foundations with large square cuttings in the top surface into which were placed smaller limestone blocks with dowel cuttings for the lowest step (Camp and Dinsmoor 1984: 7 and fig. 9).

The final stage of construction was to finish the outer surface of the walls by removing the rough quarry surface that had been left on during transportation. Some buildings of limestone or another coarse stone would be finished with a layer of fine stucco. In both the Doric and the Ionic orders, walls and other elements of the superstructure could be embellished with decorative moldings that have their own vocabulary of profile and decoration and their placement in the elevation of a building follow predictable rules of architectural syntax. The cavetto and hawksbeak are among the oldest crowning moldings and are decorated with a leaf pattern that springs from the base and terminates on the vertical or recurving upper edge. The leaves often alternate in color (horizontally, or between base and tip) and have a central vein. An ovolo provides a horizontal emphasis: it has the profile of an egg, and its decoration was that of an egg separated by a vertical dart. The cyma reversa molding, usually employed at the junction of a projecting horizontal member with a vertical surface, such as the soffit of a geison, was decorated with a Lesbian leaf pattern. Paint was used to color architectural elements in both solid colors and decorative patterns. The vocabulary of color, in the Doric order, is related to the vertical and horizontal rhythm of the entablature. The regulae, triglyphs, and mutules were typically painted a dark blue, while the metopes and viae were painted red. Paint could also be used to emphasize the sculpted ornament of architectural moldings (leaf pattern for cavetto or hawksbeak, egg and dart for ovolo, Lesbian leaf for cyma reversa) or replace it entirely (Hellmann 2002: 229–245; see [Chapter 12](#)).

The Arch

The classical orders rely on post and lintel supports, but the arch appeared in Greece during the fourth century and provided builders with another valuable construction technique. There are many ways to construct arches and vaults,

including corbelled arches and vaults that were used in Mycenaean architecture, but the technique used in Greek architecture relies on individual wedge-shaped blocks (voussoirs) arranged in a half-circle, with a central keystone block. The earliest extant examples of arches appear in the gateways of the fourth-century fortification walls of the cities of Kassope and Priene (summary in Hellmann 2002: 268–271). At approximately the same time, the first barrel vaults, an arch that has been continued in a longitudinal direction, are found in fourth-century tombs in Thrace and Macedonia and the entrances into the stadia at Nemea and Olympia. While vaults also provide an innovative approach to framing interior space, it would be the Romans who explore this potential in a later period. Greeks did, however, take advantage of the structural qualities of the arch. In the second-century BCE stoa of Eumenes in Athens, the location of the building on the south slope of the Acropolis made it desirable to build a back wall that also served as a retaining wall. The solution was to build a series of arches (Figure 8.4) that create a strong wall, and buttress one another along the length of the structure. In the finished building, however, the arches were hidden behind a dressed masonry wall and the façade of the building featured classical orders using post and lintel design.



Figure 8.4 Stoa of Eumenes, Athens, view of arched buttresses.

Source: N. Klein.

Architectural Design

One of the defining characteristics of Greek architecture and the classical orders is an established vocabulary and syntax of architectural elements with their own system of proportions. Both the Doric and Ionic orders rely upon cylindrical columns for post-and-lintel, or trabeated, structure, but they are distinguished from one another by the forms and proportions of their individual elements. Distinctively Doric and Ionic elements appeared in the late seventh century, beginning with the columns and capitals and continuing with the entablature, including the triglyph and metope frieze of the Doric order, the dentils and continuous frieze of the Ionic. A period of creativity and regional diversity from the late seventh to the late sixth century BCE led to the development of unique forms and the relationship of individual elements to one another. These recognizable architectural orders, Doric and Ionic, once established, are remarkably conservative in the following centuries (Barletta 2001, Wilson Jones 2014).

The elevation of the Doric order ([Figure 8.5](#)) has fluted columns, a capital in two parts (echinus and abacus), and a tripartite entablature with architrave, triglyph and metope frieze, and geison. The column stands directly on the upper step, or stylobate, of the building and vertical, concave flutes that terminate in sharp point, or arris, articulate its surface. The profile of the Doric echinus varies over time, generally progressing from flat and bulging to a more vertical, taut, outline. The capital could be decorated with paint or occasionally sculptured decoration (e.g., Temple of Artemis at Corfu; see Barletta 1990: 46–47) and was surmounted by a square, flat abacus. The decorative elements of the entablature, including the regulae and taenia on the architrave and the mutules on the soffit of the geison, consist of cylindrical guttae below flat bands (the regulae on the architrave) or plaques (the mutules of the geison) that suggest an imitation of wooden forms. The horizontal and vertical rhythm of the Doric façade is established by the relationship between these elements. The colonnade provides a vertical emphasis as the columns taper from base to capital while also establishing a horizontal interval, the intercolumniation. The architrave and frieze continue this rhythm with the placement of a regula and triglyph above and between each. The mutules of the Doric geison are placed above each triglyph and metope, so that the vertical rhythm is carried throughout the elevation, while being expressed and expanded with a new form in each successive course.

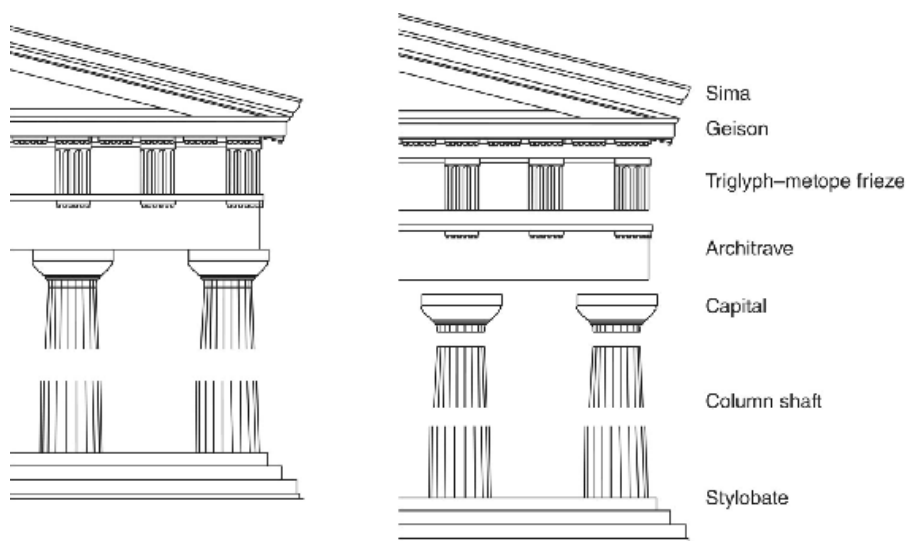


Figure 8.5 The Doric temple.

Source: N. Klein.

The structural and visual rhythm of column, architrave, frieze, and geison is reinforced by a system of proportions between individual parts. Although it is difficult to determine from a modern perspective, the individual module used to design a temple, the space between columns, or the intercolumniation, must have been an important factor in determining the overall size of the building, and the proportional relationships would have been easily recognizable. Once the number and spacing of the columns have been identified, the dimensions of the column must follow, specifically the lower diameter, the height, and the degree of taper and entasis. While the Archaic period was characterized by experimentation and a variety of forms, by the Classical period the proportional relationships of the individual elements of the entablature had been established. The width of the regula corresponds to the width of both the triglyph and the metule, and the proportion of the triglyph to the metope is 2 : 3. Since triglyphs are spaced above and between each column, in theory this means that the space between columns equals the width of five triglyphs (Wilson Jones 2001).

The modular design of the façade is related to the plan of the building and particularly to the alignment of the peristyle with the cella walls and interior colonnade. In plan, the outer peristyle is usually aligned with the interior structure, including the cella walls, the antae and porch columns, and the interior colonnade. As seen in the interior of the Temple of Aphaia II (Figure 8.2) and the partial section of the Parthenon (Figure 8.3), these vertical elements must create an integrated structure in order to support the flat ceiling and pitched roof above. The timber beams used for ceilings and rafters had to be supported, and the distances from peristyle to cella wall, and cella wall to

interior colonnade were carefully calculated. The horizontal span could not be greater than the available wooden timbers, and the height of the wall and interior colonnade was calculated to provide sufficient support for the vertical props and horizontal timber which, in turn, supported the central ridge beam, purlins, and rafters.

The Ionic order features many of the same architectural elements as the Doric order, but the decorative details and proportions produce a much livelier and ornamental structure (Figure 8.6). The Ionic column rests on a base that may include a combination of plinth, torus, and other moldings. The column surface is fluted, but the flutes end in flat fillets rather than a pointed arris. The Ionic capital usually consists of volutes framing an echinus with an abacus above, and the last two are often decorated with painted and sculpted moldings. Above, the Ionic entablature consists of an architrave that is typically divided into two or three fascias and may be combined with continuous frieze and dentil course above. The projecting geison consists of a concave soffit and moldings. In general, the continuous horizontal elements, such as the triple-fascia architrave, the frieze and dentil course, create a different effect from that seen in the Doric order, one that is less structured and does not clearly express the interlocking proportional relationship of the individual parts.

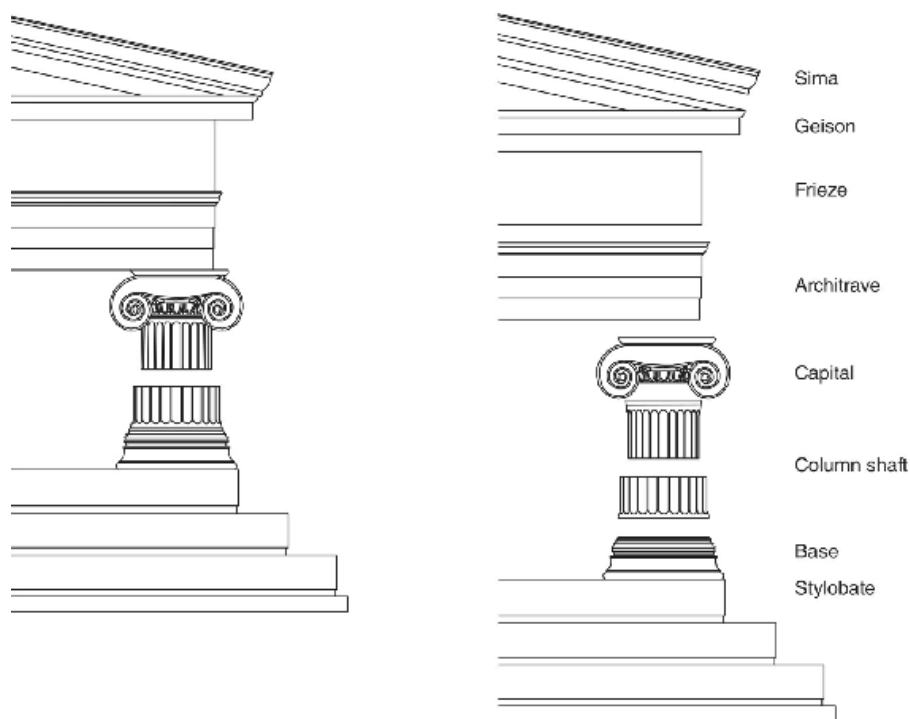


Figure 8.6 The Ionic temple.

Refinements

The terms “refinements” or “optical refinements” are often used to describe deviations from a straight line, whether vertical or horizontal, in a finished structure. Vitruvius described a number of these, including entasis (*De arch.* 3.3.13), stylobate curvature (*De arch.* 3.4.5), and outward inclination (*De arch.* 3.5.13), as means to influence how buildings were perceived by the human eye (Vitr. *De arch.* 4.4.3). The first modern observations of architectural refinements began in the eighteenth century following studies of the Temple of Hera at Paestum by P.A. Paoli and the study of the Parthenon by C.R. Cockerell, L. Hoffer, F.C. Penrose, and others (Rowland and Howe 1999: 221, n. 18; Hellmann 2002: 185–186). As the study and publication of Greek architecture continued, the careful measurement of standing structures and individual elements led to the recognition of small adaptations dating back to the sixth century in many areas of the Greek world. In 1912, W.H. Goodyear published his study on Greek refinements, which still serves as a standard reference on the subject. In the last several decades, new, more precise and innovative techniques for measuring buildings have provided even more accurate data to aid in the analysis of architectural refinements (Haselberger 1999). Horizontal curvature has been measured in the crepis of several temples from the sixth century and fifth centuries, including the Temple of Apollo at Corinth, the Temple of Athena at Cartheia, and the second Temple of Aphaia on Aigina, the Parthenon and the Hephaisteion in Athens. This deviation in the exterior horizontal line of the crepis is sometimes accompanied by an overall upward thrust of the platform, with the outer edge slightly below that of the center of the building (Figure 8.7). Changes to the vertical alignment of building elements include entasis of columns and the inward or outward inclination of columns and walls. The columns of the first Temple of Hera at Paestum, circa 550 BCE, are well known for their distinctive, swelling profile, and other examples can be found in the Doric temples of southern Italy (Athena at Paestum, Tavole Palatina at Metapontum), on the Greek mainland (Hera at Olympia, Aphaia II, Parthenon, Propylaia, Hephaisteion). Entasis is also seen in Ionic buildings, including the sixth-century temple of Demeter on Naxos, the north porch of the Erechtheion, the fourth-century Temple of Athena at Priene, and the Didymaion. Other vertical adjustments to the building include the inward inclination of the columns of the peristyle (Parthenon), and Vitruvius argues that the entablature, pediments, and roof edge should all have a slight exterior inclination (*De arch.* 3.5.13).

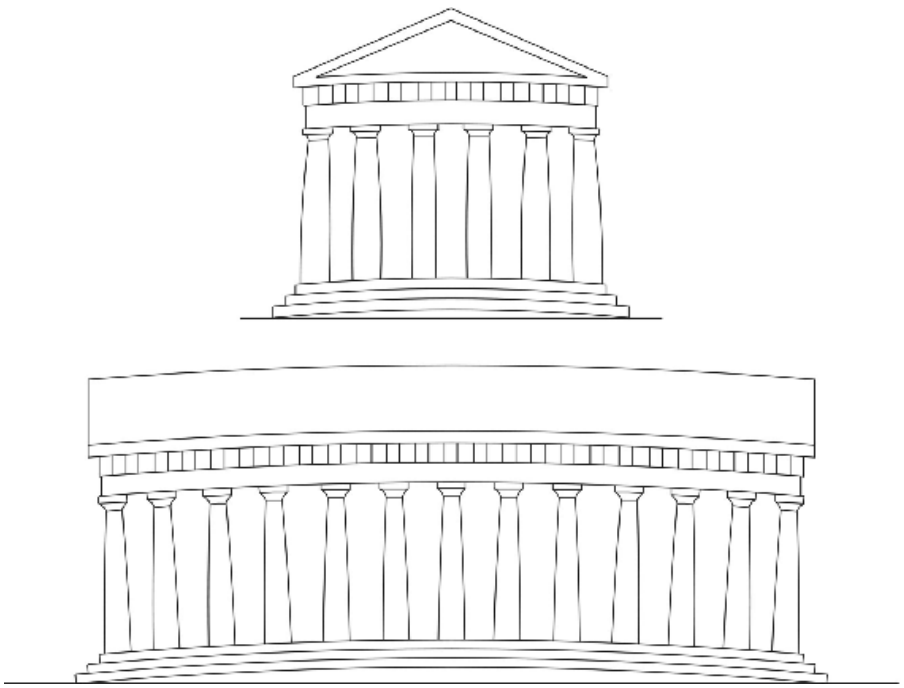


Figure 8.7 Horizontal and vertical curvature in Doric architecture.

Source: N. Klein.

While these horizontal and vertical refinements can be very slight or clearly visible, the manner in which they were calculated and executed is not entirely clear. Several temples provide clues as to how this process might have been carried out. The Unfinished Temple at Segesta has regularly spaced marks still visible on the euthynteria that might have been used to calculate horizontal curvature of the crepis. D. Mertens has suggested that the catenary of a cord held at either end of the euthynteria would have established a consistent curve that, when inverted, offered a simple guide (Mertens 1974: 107–114). Mertens has also proposed a similar method for establishing the entasis of the columns of the sixth-century Temple of Hera at Paestum, where the length and radii of a column drum were inscribed on a wall and a cord held at the lower edge provided the appropriate curve (Mertens 1993: 77–79). L. Haselberger has studied a series of drawings incised on the walls of the Temple of Apollo at Didyma and determined that a section of the column shaft (central axis to outer diameter) was scaled at 1 : 16 and provided a means of measuring and carving the curvature along its entire length (Haselberger 1985: 130–131). An important discovery made by H. Bankel has resolved a formerly ambiguous passage in Vitruvius about how “unequal little stools” (*scamilli impares*) could be used to establish horizontal curvature. While he was investigating an Ionic propylon at Knidos, Bankel identified a series of circular holes, approximately 5 cm in diameter, spaced out in a row along the euthynteria. The depth of each when measured from the top surface varies in a precise,

regular sequence, with the shallowest at the ends and the deepest toward the center of the row, yet the bottom surfaces of the holes are at a uniform level. Bankel (1999) recognized that a simple device, such as disks of wood of graded heights (linked with a cord) must have been used to establish curvature in the euthynteria and provide the appropriate levels for a curved stylobate above it, just as Vitruvius describes. This new discovery illustrates how sophisticated results could come from a simple apparatus.

Although these slight deviations from a uniform design are measurable, and in many cases visible to the human eye, the motivation for making them remains subject to discussion. Vitruvius suggested that the adjustments were meant to bring back into visual balance the relationship of building parts (Vitr. *De arch.* 4.4.2–3). His theory was based on Euclid's studies of optics and geometry and may also reflect an awareness of optical distortion in art that was discussed by Plato (*Soph.* 235–236; for a discussion of optical science and philosophy see Rowland and Howe (1999: 221, 229)). Current studies in neurobiology may also contribute to our understanding of the ways in which the human eye can be deceived. The intended effect may be less subtle, however, especially in the case of entasis. The bulging columns of the Temple of Hera I at Paestum, although made of stone, appear to be responding to the weight of the entablature and roof above. Mertens has suggested that this is an attempt to enliven the static material and endow it with a corporeal quality (Mertens 1988: 307–318). It may also be an attempt, along with other characteristics of the Doric entablature, to reflect in stone the qualities of a wooden structure that is visibly bowed by the weight it supports. A more practical reason for creating a stylobate that sloped to the outside and an entablature with exterior inclination would be to provide a protective overhang and to evacuate rainwater from the pteron.

FURTHER READING

An important introduction to Greek building processes is Coulton's *Ancient Greek Architects at Work* (1977). Camp and Dinsmoor (1984) provide a brief overview of techniques. Rhodes' articles (1987a; 1987b; 2003) offer a thoughtful presentation of quarrying and construction techniques in the seventh-century Corinthia and how they related to the development of monumental architecture. Barletta 2001 examines the appearance and development of architectural forms leading to the formation of the Doric and Ionic order. The most comprehensive references for understanding Greek construction techniques are Martin 1965 and Orlandos 1966, both of which provide documentation and analysis of building practices. Hellmann 2002 offers a more recent addition to this genre, with copious illustrations and bibliographic references. For the challenges faced by architects of individual

buildings, there are publications that present a block-by-block study of a temple and allow the reader to explore construction techniques: see, e.g., Orlandos' publication of the Parthenon (1976–1978), Schwandner's research on the first temple of Aphaia on Aigina (1985), and Merten's study of the Temple of Hera I at Segesta (1984). Recent approaches to understanding Doric design include Wilson Jones's study of modules and the origins of the orders (2001; 2014), Waddell's evaluation of ratios and proportions (2002), and Senseney's study of geometrical principles (2011).

REFERENCES

- Bankel, H. 1999. "Scamilli impares at an Early Hellenistic Ionic Propylon at Knidos – New Evidence for the Construction of a Curvature." In Haselberger, ed., 127–138.
- Barletta, B.A. 1990. "An "Ionian Sea" Style in Archaic Doric Architecture." *AJA*, 94: 45–72.
- Barletta, B.A. 2001. *The Origins of the Greek Architectural Orders*. New York.
- Bommelaer, J.-F. 1991. *Guide de Delphes: Le site*. Paris.
- Broneer, O. 1971. *Isthmia I: Temple of Poseidon*. Chicago.
- Burford, A. 1969. *The Greek Temple-Builders at Epidauros: A Social and Economic Study of the Building in the Asklepien Sanctuary during the 4th and 3rd centuries BC*. Liverpool.
- Büsing, H. and H. Drerup, eds. 1988. *Bathron: Beiträge zur Architektur und verwandten Künsten: für Heinrich Drerup zu seinem 80. Geburtstag*. Saarbrücken.
- Camp, J.M. and W.B. Dinsmoor Jr. 1984. *Ancient Athenian Building Methods*. Athens.
- Clarke, S., R. and Engelbach. 1990. *Ancient Egyptian Construction and Architecture*. Reprint. New York.
- Coulton, J.J. 1974. "Lifting in Early Greek Architecture." *JHS*, 94: 1–19.
- Coulton, J.J. 1977. *Ancient Greek Architects at Work*. Ithaca
- Dinsmoor, W.B. and W.B. Dinsmoor Jr. 2004. *The Propylaia to the Athenian Akropolis. Vol. II: The Classical Building*. Princeton.
- Felsch, R. 2001. "Drei frühe Phasen des dorischen Tempels: Delphi–Kalapodi–Mykene." *JDAI*, 116: 11–15.

Goodyear, W.H. 1912. *Greek Refinements: Studies in Temperamental Architecture*. New Haven.

Haselberger, L. 1985 "The Construction Plans for the Temple of Apollo at Didyma." *Scientific American*, 253 (6): 126–132.

Haselberger, L., ed. 1999. *Appearance and Essence, Refinements of Classical Architecture: Curvature*. Philadelphia.

Hellmann, M.-C. 2002. *L'Architecture grecque 1: Les principes de la construction*. Paris.

Herrmann, K. 1976. "Beobachtungen zur Schatzhaus-Architektur Olympias." In Jantzen, ed., 321–350.

Hodge, A.T. 1960. *The Woodwork of Greek Roofs*. Cambridge.

Jantzen, U., ed. 1976. *Neue Forschungen in griechischen Heiligtümern*. Internationales Symposium in Olympia vom 10. bis 12. Oktober 1974 anlässlich der Hundertjahrfeier der Abteilung Athen und der deutschen Ausgrabungen in Olympia. Tübingen.

Laroche, D. and M.-D. Nenna. 1990. "Le Trésor de Sicyone et ses fondations." *BCH*, 114: 241–284.

Martin, R. 1965. *Manuel d'architecture grecque*. Paris.

Mertens, D. 1974. "Die Herstellung der Kurvatur am Tempel von Segesta." *RM*, 81: 107–114.

Mertens, D. 1984. *Der Tempel von Segesta und die dorische Tempelbaukunst des griechischen Westens in klassischer Zeit*. Mainz am Rhein.

Mertens, D. 1988. "Zur Entstehung der Entasis griechischer Säulen." In Büsing, ed., 307–318.

Mertens, D. 1993. *Der alte Heratempel in Paestum und die archaische Baukunst in Unteritalien*. Mainz am Rhein.

Ohnesorg, A. 1993. *Inselionische Marmordächer*. Berlin.

Orlandos, A. 1966. *Les Matériaux de construction et la technique architecturale des anciens grecs*. Paris.

Orlandos, A. 1976–1978. *Hē architektonikē tou Parthenōnos*. Athens.

Rhodes, R.F. 1987a. "Early Stoneworking in the Corinthia." *Hesperia*, 56: 229–232.

Rhodes, R.F. 1987b. "Rope Channels and Stone Quarrying in the Early

Corinthia.” *AJA*, 91: 545–551.

Rhodes, R.F. 2003. “The Earliest Greek Architecture in Corinth and the 7th-Century Temple on Temple Hill.” In Williams and Bookidis, eds., 85–94.

Rowland, I.D. and T.N. Howe. 1999. *Vitruvius: Ten Books on Architecture*. New York.

Schwandner, E.-L. 1985. *Die ältere Porostempel der Aphaia auf Ägina*. Berlin.

Senseney, J.R. 2011. *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture*. New York.

Waddell, G. 2002. “The Principal Design Methods for Greek Doric Temples and Their Modification for the Parthenon.” *Architectural History*, 45: 1–31.

Walter, H. 1990. *Das griechische Heiligtum, dargestellt am Heraion von Samos*. Stuttgart.

Wiegand, T. 1904. *Die archaische Poros-architektur der Akropolis zu Athen*. Berlin.

Williams, C.K., II and Bookidis, N., eds. 2003. *The Centenary: 1896–1996*. Corinth 20. Princeton.

Wilson Jones, M. 2001. “Doric Measure and Architectural Design 2: A Modular Reading of the Classical Temple.” *AJA*, 105: 675–713

Wilson Jones, M. 2014. *Origins of Classical Architecture: Temples, Orders and Gifts to the Gods in Ancient Greece*. New Haven.

Winter, N.A. 1993. *Greek Architectural Terracottas from the Prehistoric to the End of the Archaic Period*. Oxford.

PART II

Temples and Sanctuaries

CHAPTER 9

“Internationalism” in Architecture: Olympia

Nancy L. Klein

The Panhellenic sanctuaries of Olympia, Delphi, Isthmia, and Nemea each embodied a sacred space dedicated to the gods where humans expressed devotion. As was the case in most sanctuaries, temples provided a home for the gods, and worshippers offered sacrifices, prayers, and gifts to please the powerful Olympians. But these four sanctuaries carry a special distinction in the Greek world based upon their cosmopolitan, non-local character. Although the term “Panhellenic” was not used by the ancient Greeks themselves (*OCD*, s.v. “Panhellenism”), the emphasis on a shared Greek religion and culture was at the heart of these sanctuaries. Most cities of the ancient world had sacred spaces that served the community, ranging from a richly endowed sanctuary, such as the Acropolis of Athens, to a mountaintop temenos and altar. These were established and supported by the local community, and their placement within or around a city served to define civic identity and influence or control a particular region. The Panhellenic sanctuaries, in contrast, invited participation from all Greeks and became an international stage for competition and display, as well as the dissemination of cultural values (Morgan 1990, 1993: 18; Hellmann 2006: 112–113).

Olympia hosted games that celebrated athleticism in honor of Zeus. While Delphi also hosted both athletic and musical competitions, it was most famous for its oracle of Apollo, which could be consulted by individuals, as well as civic entities. The sanctuaries at Isthmia and Nemea offered a variety of competitions in honor of Poseidon and Zeus, respectively. While only Greeks participated in the games, at least until the Roman period, the Panhellenic sanctuaries attracted visitors from around the ancient world: famously, Kroisos of Lydia consulted the oracle of Apollo at Delphi regarding the Persian advance to his kingdom (Hdt. 1.152). Non-Greeks also made a variety of dedications in the Panhellenic sanctuaries, but only Greek cities dedicated small buildings known today as treasuries. Although there has been much discussion of the proper terminology for these structures, Georges Roux has very elegantly and succinctly described a treasury as a building dedicated in a sanctuary as an offering that also serves as a shelter for offerings (Roux 1984b: 154). Their primary function is to house valuable offerings that might otherwise suffer from exposure to the weather, destruction, or theft if left outside. The Alexandrian lexicographer Hesychius defines a *thesaurus* as a

building that, as its primary purpose, stores statues, riches, and sacred objects. It is the treasuries that offer the most promising place to begin a discussion of architectural internationalism.

The central question here is how the architecture of Olympia, and the treasuries in particular, reflected the identity of the donor (city) and expressed distinctive architectural style, symbolic importance, and influence.

Monumental buildings are usually identified as expressions of the classical orders, Doric and Ionic (with the later addition of the Corinthian capital), which are defined by the use of specific architectural elements according to formal rules of syntax and proportion. Greeks, however, never used the term “order” to describe their own architecture, and even a brief survey of temples will reveal a variety of forms and technical solutions to the many design challenges faced by builders. Since the mid-1970s, several studies have analyzed architectural design, especially aspects of decoration, construction, and execution, in order to determine the origins and dissemination of specific styles. For example, Dieter Mertens studied the architecture of the Achaean colonies in southern Italy, especially at the site of Paestum, and compared it to the founding cities in order to understand how the plan, entablature, and decorative features were created, disseminated, and developed over time (1976; 1993: 151–174). He suggests that the Achaean colonies do share certain details of style but that the traditions of the Greek mainland and Etruria also play a role in creating a unique result. Barbara Barletta’s proposal for an “Ionian Sea style” focuses on architectural features such as the capital with leaf necking, the sofa-type anta capital, and a predilection for horizontal decoration that had previously been attributed to the Achaean colonies of South Italy (1990: 45–72). Her results support the identification of regional styles but indicate also that these features were not limited to the Achaean colonies and included other areas, especially Northwest Greece.

Thus a more complex process, in addition to colonial networks, must be posited. Nancy Klein examined the evidence regarding roof construction, as demonstrated by the extant stone geisa and terracotta roofing systems. She suggests that Sicilian buildings may have created a timber roofing frame that spread to the Greek mainland through the construction of treasuries at Olympia (Syracuse, Gela) and are later found in the Temple of Zeus in the same sanctuary (Klein 1998). Since the mid-1990s, studies of architectural terracottas and roofing systems have also revealed distinctive qualities of structure, decoration, and syntax that express regional styles. Nancy Winter first proposed a means for describing and identifying regional styles on the Greek mainland in the Archaic period (1993), and she published a masterful study of the architectural terracottas in Etruria and central Italy (Winter 2009). For the Sanctuary of Zeus at Olympia, Joachim Heiden’s work provides a definitive catalogue and analysis of the roofs found throughout the sanctuary (1995; see also [Chapter 4](#)). The methods of inquiry and material focus used in

these studies provide us with a model for investigating the architecture at Olympia.

History and Topography of Olympia

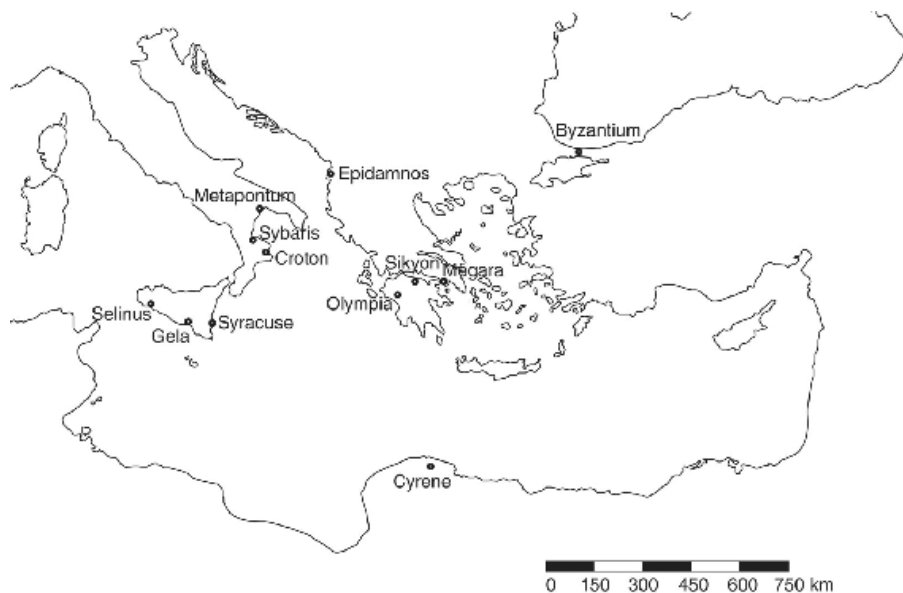
The most prestigious athletic festival in the ancient Greek world was hosted at Olympia. Pausanias (5.7.6–5.8.5) describes games celebrated by Pelops, Augeas, and Herakles that hint at their establishment in the remote past, but a list of Olympic victors established by the sophist Hippias in the late fifth or early fourth century BCE suggests that the games were established in 776 BCE, the commonly accepted historical starting point. The competition at Olympia was celebrated every four years thereafter in a regular cycle that saw the celebration of other Panhellenic festivals in the intervening years. The importance of this cycle is reflected in the use of the numbered Olympiads as a basis for the Greek calendar by the Hellenistic period (*Brill's New Pauly*, s.v. “calendar”). The games attracted participants from around the Greek world and, over time, the sanctuary became one of the richest and most famous in the ancient world. Not only did athletes make dedications to Zeus in honor of their victory but cheaters were publicly shamed by the requirement that they dedicate *zanes*, bronze statues of Zeus along the path leading into the stadium. Cities displayed trophies taken from enemies in battle, or they commissioned works of art to celebrate their wealth and piety. The decision to make a dedication at Olympia was undoubtedly determined by a number of considerations, but it is clear that the display of a gift in the sanctuary was a visible statement that drew attention from all visitors. Pausanias illustrates how crowded the sanctuary had become in the second century CE with his description of the many statues and buildings he observed, frequently accompanied by a commentary on the identity of donor.

The sanctuary, known as the Altis, is situated at the confluence of the Alpheios and Kladeos rivers, with the hill of Cronus along its northern edge. It originally fell under the jurisdiction of the territory of Pisa, but control lay in the hands of Elis by the sixth century BCE. While the Eleans benefitted from this position, it does not appear that they played a significant role in shaping the character or development of the sanctuary from an architectural perspective. Instead, the early sanctuary reflected its growing importance as a regional, pan-Dorian sanctuary (Roux 1984b: 155). Throughout the following centuries, Olympia benefitted from the magnanimity of powerful figures, including Alexander the Great and the Ptolemies, and later suffered depredation at the hands of Sulla and others who plundered the sanctuary for their own gain. The sanctuary continued to play an important role throughout the early Roman Empire, when it was patronized by emperors, such as Nero. In 394 CE, a decree by Theodosius I brought the quadrennial festival of the

Olympia competition to an end. The sanctuary fell into disrepair, and the changing course of the Kladeos' riverbed resulted in gradual disappearance of much of the site beneath layers of alluvium. In the nineteenth century, interest in the Sanctuary of Zeus was sparked by archaeological exploration and a renewed interest in athletic competition. Exploration of the sanctuary began in 1829 with the work of the Expédition de Morée in the ruins of the Temple of Zeus. Since 1875, archaeological excavation under the auspices of the German Archaeological Institute has uncovered a long and complex history of human activity in and around the sanctuary.

There is archaeological evidence for prehistoric occupation going back to the Early Helladic period, while evidence of Mycenaean cult activity has been found in the area of the later Pelopeion. The development of the Altis, its architecture and the design of its landscape, began in the seventh century BCE and reflects the increasingly complex character and nature of the activities carried out within. As a Panhellenic sanctuary that hosted the oldest and most prestigious athletic competition in the ancient Greek world, the built environment at Olympia was designed to support a variety of activities. One of the earliest focal points is the Pelopeion, an enclosure honoring the hero Pelops, who defeated Oinomaos, king of Pisa, in a chariot race to win Hippodamia as his bride. In the course of the seventh century BCE, an ash altar was established and the earliest buildings, attested by remains of terracotta roofs (Heiden 1995) and a possible bronze revetment (Philipp 1994), were constructed. The first temple, at the northwest corner of the Altis, was built shortly after 600 BCE and was identified by Pausanias and other sources as the Temple of Hera, although Zeus may have been worshipped here prior to the construction of the large temple to the south, circa 470–457 BCE (Moustaka 2002). A third temple, dedicated to the Mother of the Gods, was built at the end of the fifth or early fourth century. Treasuries dedicated by Greek cities were built at the northern end of the Altis, at the base of the hill of Cronus, beginning around 580 BCE and continuing down to the first quarter of the fifth century BCE. Around 700 BCE, the first stadium and a hippodrome were purpose built to serve the athletic competitions (Schilbach 1992), while other facilities for the training of athletes (palaistra, third century BCE; gymnasium, second century BCE) and the accommodation of visitors (public bath, fifth century BCE; hostel or “Leonidaion,” fourth century BCE) were added over time. In the late sixth century BCE, the bouleuterion and the prytaneion were established to facilitate the administration of the competition. During the fourth century BCE, stoas were built along the south (*Süd-Halle*) and east (*Echo-Halle*) sides of the Altis and served a variety of purposes. Following the Battle of Chaironeia in 338 BCE, Alexander the Great paid for the construction of a circular building, the Philippeion, to honor his father Philip II. During the Roman period, the sanctuary was maintained and the infrastructure improved with new fountains, baths, and facilities for visitors.

This brief account of the topography and architecture of Olympia provides an impressive list of buildings that filled the Altis, but what is so special about Olympia that makes it a locus for understanding internationalism in architecture? Many of the buildings intended to serve the administration of the sanctuary, such as the bouleuteria, or the activities related to competition, including the palaistra and the gymnasium, provide valuable evidence for the design and function of a particular building type. Often, in fact, they are quite utilitarian in character: it is the function which determines the design. Architectural dedications, including the treasuries and the Philippeion, however, are clearly intended to serve a religious purpose, but they also have a deliberately self-conscious quality of public display (Neer 2007: 239). The treasuries are all dedicated by Greek cities, two of them from the mainland (Sikyon, Megara), but all others from Dorian colonies (Syracuse, Epidamnos, Byzantium, Sybaris, Cyrene, Selinous, Metapontum, and Gela) (Map 9.1). Since Greek architecture in the Archaic period was in an early stage of development where regional styles and a variety of forms and decoration appear, under closer scrutiny the architecture of the treasuries at Olympia will reveal distinctive qualities that reflect the international character of the sanctuary.



Map 9.1 Map of cities with a treasury at Olympia.

Source: N. Klein.

Architecture at Olympia

The architecture at Olympia has been studied for over a century, beginning with the first excavations carried out in the Altis and continuing to the present day. Systematic excavation and study of the fragments of architecture and roofing systems now provides a more complex view of the life-history of the sanctuary and the sequence of buildings that stood on the treasury terrace. One of the greatest challenges is the lack of primary context or connection between the findspot of the architectural elements and their original location. As K. Herrmann has pointed out, the treasury buildings each had their own life-history as they were dedicated, damaged by earthquake, rebuilt, replaced, and ultimately destroyed and their superstructure reused in other buildings. All of the treasuries were dismantled, and very few pieces of architecture were found near their original location (1992: 27).

Ancient sources identify the treasuries at Olympia and at Delphi by the name of a city-state, although there is evidence to suggest that tyrants built some of the dedicatory structures in both Panhellenic sanctuaries. Pausanias (6.19.2) tells us that Myron, a tyrant from Sikyon, built a treasury at Olympia following his victory in the chariot race in the thirty-third Olympiad (648 BCE). Also in the seventh century BCE, Kypselos dedicated a treasury in his own name at Delphi, but it was known in later times as the Corinthian treasury. Barring the extraordinary wealth possessed by some tyrants, it seems likely that civic sponsorship would have been necessary since the costs of materials and construction would have been far too great for an individual to assume (Neer 2007: 240). The act of civic patronage was marked in three instances by inscribing the name of the donor city on the façade of the treasury: the cities of Megara and Sikyon at Olympia, and the Knidian treasury at Delphi (Roux 1984b: 154). Thanks to Pausanias, the identity of most of treasuries at Olympia can be determined, but we know little about the circumstances or motivation for their dedication. As mentioned above, Myron was said to have built the first Sikyonian treasury at Olympia following a victory, but Herrmann points out that there is virtually no correspondence between preserved victor lists and the civic dedication of a treasury at Olympia (1992: 25).

In an investigation of architectural style at Olympia the first step is to establish the identity of the buildings with extant remains; next comes a consideration of the historic and cultural contexts associated with their construction. The identification of the treasuries at Olympia is based largely upon the account of Pausanias (6.19.1–15). Pausanias mentions a total of 11 treasuries, beginning with Sikyon, Carthage, and two treasuries of Epidamnos, followed by Byzantium, Sybaris, Cyrene, Selinous, Metapontum, Megara, and Gela. For over a century, scholars have struggled to reconcile this narrative with the foundations uncovered by the excavations (Dyer 1905: 294–296; Mallwitz 1972: 163–166; Mertens-Horn and Viola 1990: 235–237; Herrmann 1992: 25–27), since there are more foundations than known names of

dedicating cities. Although there are still some underlying uncertainties, Hermann presents evidence to support the following names of the treasuries, from west to east: Foundation I, Sikyon; Foundation II, Syracuse; Foundation III, Unknown; Foundation IV, Epidamnos; Foundation V, Byzantium; Foundation VI, Sybaris; Foundation VII, Cyrene; Foundation VIII, Altar (?); Foundation IX, Selinous; Foundation X, Metapontum; Foundation XI, Megara; Foundation XII, Gela. There are also foundations for three smaller buildings to the west of the first foundation, although only one, “O,” is illustrated in most plans of the treasury terrace (Figure 9.1).

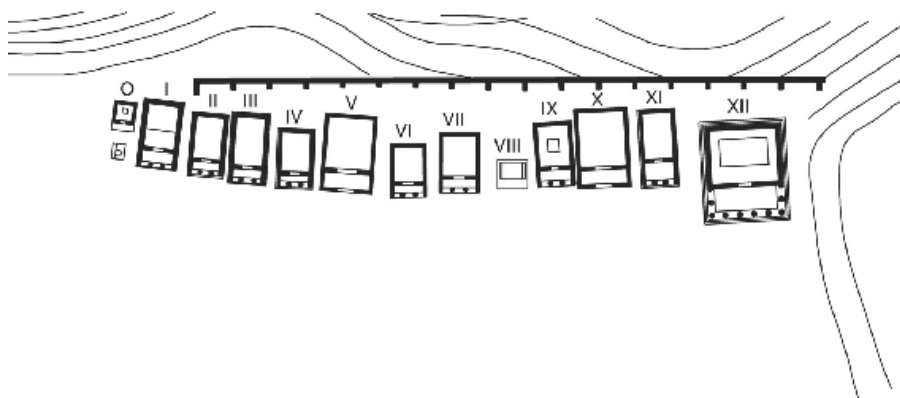


Figure 9.1 Treasury terrace, Olympia, plan.

Source: N. Klein, adapted from Herrmann 1992.

Pausanias’ identification of the treasuries at Olympia and his description of their contents visible in his time lead us to believe that there was a clear connection between the city-state and the display of offerings. Treasuries appear like small temples, often having a distyle in antis façade built in the Doric or Ionic order. Given this rather broad definition of function, and the relatively narrow physical description, how can we investigate the way in which these treasuries expressed individuality or conformity? In today’s society, an architect most often achieves fame for the innovative and novel design of his structures. In ancient Greece, builders were not only constrained by material and technical ability but also, even if they were capable of implementing an original design, by tradition. A glance at the site plans of Delphi and Olympia reveals a remarkably homogeneous design for most treasuries: a rectangular structure divided into a shallow porch with single room behind and, in most cases, a façade elevation defined by two columns in antis, with a pitched roof above. In the sanctuary at Delphi, cities placed their treasuries along the steep and winding Sacred Way, which resulted in a variety of orientations and views. The treasuries in the Sanctuary of Apollo could be Ionic or Doric and were often richly embellished with sculpted and painted ornament.

At Olympia, the treasuries were all built along a single terrace and, in their

final form, are lined up in a row facing south. This linear disposition promotes the notion of regularity, predictability, and conformity. Indeed, all of the treasuries in the Altis are built in the Doric order, but a closer look reveals a wide range of scale and proportion in plan. Eight of the twelve have a distyle in antis porch with single room behind (Foundations I, II, III, IV, VI, VII, XI, and XI), but two others had a closed façade (Foundations V, X). The original structure of the Geloan Treasury (Foundation XII) was a large rectangular room aligned east–west. A porch with six columns on the face and two and a half on each return was added to the south side in the early fifth century, thus completing the treasury with a design consistent with the other buildings. Foundation VIII, in its present form, probably did not support a treasury.

The elevation of even a simple two-room treasury building provides a very rich canvas for variety and individualized expression. The Doric column can vary in proportions (lower diameter to height being one of the most chronologically significant), and the capital itself may carry painted or sculpted decoration, in addition to varying the profile of the echinus. The scale and proportions of the entablature (architrave, triglyph–metope frieze, geison) offer similar potential, with the addition of sculpted or painted metopes, mutular and non-mutular soffits, as well as moldings and painted decoration. Sculpted pediments provide a means for figural representation of a story or event with relevance to the donor city. Perhaps the most significant field (in terms of area) for decoration was the roofing system of terracotta or marble tiles that covered the building.

In assessing the potential of the treasuries to communicate an expression of conformity or originality, this brief consideration of both the plan and elevation suggests that there is indeed a means by which to evaluate the individual buildings and determine how similar or dissimilar they are to one another. While the fully developed model of the treasury terrace at Olympia presents a series of buildings with a general consistency of plan, there are significant variations in elevation, building proportions, and the design of individual architectural elements, the roofing systems, as well as the painted and sculptural decoration. A close examination of these distinctive qualities allows us to investigate the architectural character of each treasury and to pose the question of whether its appearance was meant to be a visible expression of civic identity (see also Herrmann 1992: 25). These details have the potential to express an architectural identity that carried significance and meaning in the ancient world.

Foundation I: The Treasury of Sikyon

Located on the Gulf of Corinth, the early history of Sikyon was dominated by the Orthagorid tyrants, including Myron who was victorious in the chariot

race at Olympia circa 648 BCE. Pausanias attributed the treasury he saw to Myron, but the one that stood on the terrace in his time had been built in the early fifth century BCE. A series of yellow sandstone geison blocks were found by excavators in a secondary context and date to the early sixth century. Since the blocks were reused in the fifth century, it is possible that they belonged to a predecessor of the Sikyonian treasury (Herrmann 1976: 323–325; 1980).

The Doric treasury built around 480 BCE provides a model for identification and analysis (Figure 9.2). The building has a distyle in antis façade, shallow porch and single room behind. Pieces of the anta, architrave, triglyph–metope frieze, cornice, tympanum, and marble roof have been recovered from later constructions, including the late antique “Spolienhaus” and a grave. The stone building material has been visually identified as calcareous sandstone, which is apparently unique in the sanctuary. Despite the fragmentary nature of the superstructure, the preserved elements are remarkably helpful in determining the character of the building. The distinctive quality of the stone has led to the suggestion that it was quarried in Sikyon and brought to Olympia for use in the city’s treasury. An anta block bears an inscription in Sikyonian letters, which helps to confirm the identity of the building and suggests that a Sikyonian craftsman was responsible for carving the inscription (Dörpfeld 1883: 67–70; Jeffrey 1961: 143).



Figure 9.2 Treasury of Sikyon, Olympia.

Source: N. Klein.

The marble roof tiles assigned to the treasury are said to be Parian and are the first in Olympia, and anticipate the use of Parian marble tiles on the later Temple of Zeus. The details of the roof (pan and cover tiles, sima, palmettes) are similar to Corinthian terracotta roofs, which clearly express a distinctive regional character. It has been suggested that the roof was created by a Sikyonian workshop (Mertens-Horn 1988: 57). Smaller details, such as the

moldings, are later used on several buildings in Attica. The cyma reversa on the soffit of the raking geison first seen here appears on the Parthenon and the Temple of Athena at Sounion, while the half-round on the taenia of the triglyph is again found on the Parthenon. This last example is rather striking, since there are no exact precedents in Olympia or in Athens, though moldings do appear on the triglyph taenia in buildings in from South Italy, Sicily, and Arcadia (Barletta 1990: 62–63). The treasury of Epidamnus on the fourth foundation, also uses decorative moldings on the taenia of its architrave. Although these few examples do not provide conclusive evidence, it is possible that the use of decorative moldings on the treasuries at Olympia were viewed and imitated, both within the sanctuary and elsewhere.

In sum, the Sikyonian treasury is a securely identified building constructed of stone that may have been quarried locally and brought to Olympia, and the details of decoration and roofing reflect a number of influences, including a roof that may have been created in a Sikyonian workshop and architectural decoration that reflect styles found at Olympia, Arcadia, and West Greece. While the motivation to have a marble roof is unclear, the treasury may also have established a new standard for display since the next example at Olympia is the Parian marble roof found on the Temple of Zeus, circa 470–457 BCE. The use of the calcareous limestone employed for the building itself should be considered to assess its importance. Richard Neer has suggested that the use of imported stone had no practical basis, but on a symbolic level served to embody the city and contextualize the dedications within (2007: 241). In a recent study of Sikyon and its territory, Yiannis Lolos has identified sandstone quarries in the surrounding plateau that could have provided this material for construction of the Olympian treasury, but he emphasizes the need for further study of both the building blocks and the quarries to confirm the source (2011: 57). Lolos also points out that there are other quarries in the area, a conglomerate source near the ancient harbor and others that provide an oolitic limestone like that used at Delphi for the Tholos and the Monopteros, sometimes identified as early Sikyonian dedications (Bommelaer 1991: 118–123; for arguments against this attribution see Laroche and Nenna (1990: 240)). This new evidence on the variety of stone raises two important questions: were these stones all easily identifiable as Sikyonian, in the same way that Cycladic or Pentelic marbles have distinctive visible qualities? And given the variety and volume of stone available in and around Sikyon, as well as easy access to maritime transport, was stone a valuable Sikyonian export rather than an exclusive expression of Sikyonian identity? It may be that the cost of quarrying local stone and transporting it to Olympia was less than that of other means of obtaining building material, but the question of its value as a distinctive feature that conveyed a specific identity remains open.

Foundation II: The Treasury of Syracuse

Pausanias (6.19.7) mentioned the “Carthaginian” treasury following the Sikyonian, which was in fact built by Syracuse but contained plunder taken from the Carthaginians following their defeat at the battle of Himera in 480 BCE. Alfred Mallwitz has argued that a group of architectural elements found reused in second-century CE walls should belong to this treasury. The extant group includes a corner triglyph, tympanum block, anta capital, column capital, nine lateral geison blocks, four raking geison blocks, two corner geison blocks, and one horizontal geison block (1961; 1972: 169). The building is reconstructed as distyle in antis, with Doric columns supporting a canonical entablature. The lateral geison blocks illustrate a technical design that has ties to Sicilian architecture in the sixth and early fifth century (Klein 1998: 364–365). The top surface slopes downward along its outer edge, while the back has angled cuttings to hold individual rafter beams. As far as we can tell from the preserved geison blocks, the cuttings range in size and spacing and have no relation to the size of the tiles attached to the top of the geison, which is clearly problematic. Ideally there should be a correspondence between rafter spacing and tile size, so it may be that the timber roof frame was not supported by regularly spaced rafters, or perhaps we are seeing evidence of recutting or rebuilding related to the roof timbers over the life of the treasury.

A similar geison design is found in temples at Selinous (Temple E, Temple F) and at Agrigento, although these geisa are composed of several blocks rather than a single one as seen at Olympia. Given its smaller scale, the geison at Olympia may be a technical adaptation of a roof design to suit a much smaller structure. Heiden has suggested that one of the Sicilian roofs (Roof 37) should belong to this treasury, but its date in the second quarter of the sixth century is much too early for the Doric architecture discussed above (1995: 162). Although the identification of these architectural elements as belonging to the Syracusan treasury is not absolutely certain, the technical design of the geison is a compelling argument in favor of Sicilian craftsman contributing to its construction.

Foundation IV: The Treasury of Epidamnos

In 626/5 BCE, the colony of Epidamnos was founded on the east coast of the Adriatic Sea by Corinth and Corfu (Thuc. 1.24–26) with a harbor that served maritime traffic between Greece and Italy. Although the location of the colony has been identified (modern Durrës, Albania), little is known of its architecture. Pausanias mentions two treasuries dedicated by the city at Olympia, but it appears that only one building existed and it stood on

Foundation IV. Very little remains of its superstructure, but pieces of a distinctive terracotta sima are associated with a fragmentary lateral geison (based on the corresponding holes for attachment), and pieces of a capital and an architrave are made from the same fine, hard, white limestone as the geison. Each of these pieces has characteristics that reflect the architectural style of Corfu and Northwest Greece. The decoration of the terracotta sima (Mallwitz 1972: 170–171, fig. 130) has close parallels with that of the Temple of Artemis at Corfu (Mertens-Horn and Viola 1990: 239–240; Heiden 1995: 112–115). The Doric capital has a row of sculpted leaves below the echinus, which Barletta suggested first appears in Corfu in the so-called Xenvares capital, circa 600–575 BCE; the Temple of Artemis, circa 580–570 BCE; and other examples from the area (1990: 46–47). The taenia of the architrave is decorated with a half-round molding that is also paralleled in the Temple of Artemis at Corfu, Temple C at Selinous, and an unidentified building at Sybaris (Barletta 1990: 67). The geison has a short vertical face above a small cavetto and is similar to a fragmentary geison discovered in the Sanctuary of Artemis on Corfu (Schwandner 1985: 124–126, fig. 76). Although the geison from Corfu does not preserve a complete profile, it offers the only known parallel for a cavetto molding on the face of a geison (Klein 1998: 360–361). These extant elements create a striking image of a richly decorated building dedicated by the colony of Epidamnos that expressed a distinctive regional style with origins in its mother-city of Corfu.

Foundation IX: The Treasury of Selinous

Herrmann associated three different groups of fine limestone geison blocks with this building on the basis of material and technical similarities: a distinctive anchor-shaped lifting hole, the use of dovetail clamps, and horizontal anathyrosis (1976: 334–338, figs. 11–15). A fragmentary column capital with broad, spreading echinus is also assigned to this building, with parallels in Selinous itself (Herrmann 1992: 31).

Heiden has proposed that his Roof 42, the latest of the West Greek roofs, may have belonged to this treasury (1995: 102–105, 162). Although the roof is in the West Greek style, it is his opinion that it is a locally produced imitation of the roof of the Geloan treasury. This leads to the intriguing suggestion that a local ceramic workshop was commissioned by Selinous to make a roof for their treasury that deliberately imitated its famous Sicilian neighbor.

Foundation X: The Treasury of Metapontum

According to Strabo (6.1.15), the colony of Metapontum was first founded by Pylos in the time of Nestor, but Achaeans from the cities of Croton and Sybaris settled here in the seventh century BCE. The tenth building on the treasury terrace at Olympia is securely identified as the treasury of Metapontum based on the narrative of Pausanias. The foundations indicate a closed building with single door facing south, but there are no extant architectural elements from its superstructure. Heiden tentatively assigned his Roof 36 to this treasury based upon its date, findspot of the fragments, and comparison to terracotta roofs found in the vicinity of Metapontum (1995: 78–82, 162).

Foundation XI: The Treasury of Megara

The treasury of Megara and that of Sikyon are the two dedications at Olympia from mainland cities, both of them near Corinth. The identification of the Megarian treasury is confirmed by Pausanias' comment (6.19.12–15) that it stood next to the treasury of Gela (last on the terrace) and the inscription of the city name on the central architrave of the façade (Mallwitz 1972: 174–175; Herrmann 1974: 75–83). A significant amount of its superstructure was recovered from the Herulian wall, including stylobate blocks, column drums and capitals, architraves, triglyphs, metopes, horizontal and raking geison blocks, and pedimental reliefs ([Figure 9.3](#)). The plan is distyle in antis with porch and main room, and the Doric elevation included a triglyph–metope frieze and mutular geison on the façade. The frieze and mutules were omitted on the flanks. A pedimental composition depicting a gigantomachy was sculpted in low relief. A Corinthian-style terracotta roof, dated from between 510 and 500 BCE, decorated the building with a raking sima on the gables and antefixes along the flanks (Heiden 1995: 23–25). The architectural forms of this building reflect mainland Doric traditions of the late sixth century BCE, where the entablature includes an architrave with regulae carrying six guttae, triglyph–metope frieze, and a mutular geison with three rows of six guttae. The style and execution of the architecture, along with the Corinthian roof, suggest that this treasury was built by craftsman from Megara and designed to represent the traditions of their city.



Figure 9.3 Treasury of Megara, Olympia, corner geison and sima.

Source: N. Klein.

Foundation XII: The Treasury of Gela

According to Thucydides (6.4.3), Dorians from Rhodes and Crete established the city of Gela on the southern coast of Sicily 45 years after the founding of Syracuse (733 BCE), thus in the early seventh century BCE. The last building at the eastern edge of the terrace, the treasury of Gela was named by Pausanias, so its identification seems secure (Paus. 6.19.15). The foundations and extant elements of its superstructure allow us to reconstruct with two building phases, a rectangular building oriented east–west dated to the middle of the sixth century, and a Doric porch added to the southern façade at the end of the century (Adler *et al.* 1982: 53–55, 215–217, pl. 39–41; Herrmann 1976: 343–348; Mallwitz 1972: 176; Herrmann 1992: 31–32). The architectural terracottas (Figure 9.4) belong to a West Greek style of roofing (Schleif and Süsserott 1944; Heiden 1995: 96–102). Scholars have debated the location of the workshop that produced this distinctive roof (see summary in Winter 1993: 289–290). Madeleine Mertens-Horn has suggested that South Italian artisans manufactured the roof in Olympia (Mertens-Horn and Viola 1990: 239) but Heiden believes that the placement marks and clay fabric support its attribution to Geloan workshop (1995: 102). Mertens-Horn’s suggestion would indicate that there were South Italian or Sicilian craftsmen at work in

Olympia who carried out commissions for the donor city. If Heiden is correct, then the entire roof would have been produced in Gela and shipped to Olympia for use of the treasury dedicated by the city.

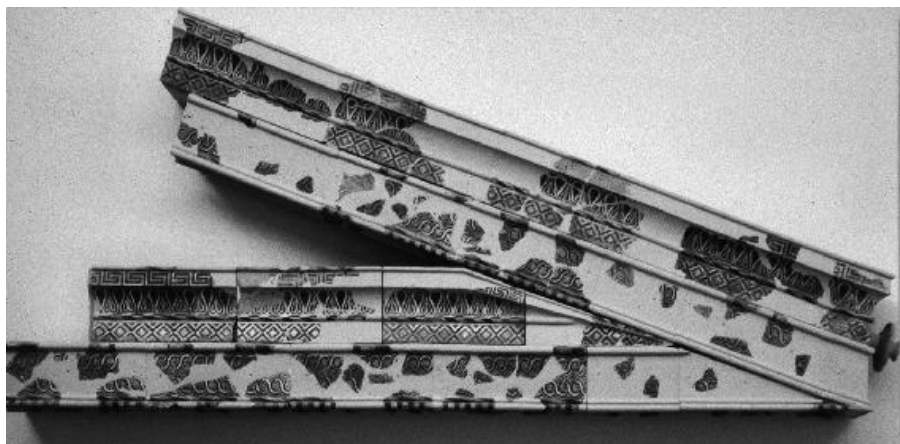


Figure 9.4 Treasury of Gela, Olympia, reconstruction of horizontal and raking simas.

Source: N. Klein.

These distinctive architectural terracottas, consisting of a sima and geison revetment, were intended originally to protect wooden elements of the roof from moisture. Herrmann observed that the use of stone blocks here is paradoxical, since there is no need to protect them from the weather (1992: 32). Indeed the shape of the stone geison appears to be a hybrid form, with its upper surface and front face designed to hold the terracotta revetments, its back provided with cuttings to seat roofing timbers, and a sloping non-mutular soffit projecting beyond the walls of the building (Figure 9.5). A slightly different design combination of mutular stone geison and terracotta revetment can be seen at several temples in South Italy, including the Archaic sacellum at Agrigento (circa 560–550 BCE), Selinous Temple C (circa 550 BCE), and Selinous Temple Y (circa 580–560 BCE) (see Klein 1998: 346–355, with earlier bibliography). The cuttings in the back of the geison are also important in that they reflect buildings practices that are found in Sicily, and they may provide evidence for one of the earliest uses of the truss in Greek architecture (Klein 1998: 362–364). The distinctive character of the terracotta roofing system and the geison blocks strongly suggests that craftsmen from Sicily traveled to Olympia to build this treasury.



Figure 9.5 Treasury of Gela, Olympia, geison.

Source: N. Klein.

At the end of the sixth century, a Doric porch was added to the south face of the building. The porch was a substantial construction in itself, with six Doric columns along the façade, and two freestanding and one engaged column on each return. An architrave and triglyph–metope frieze completed the entablature, and a pitched roof framed a gable. Heiden has assigned a Corinthian roof (Roof 6) to the porch (1995: 27–29). He suggests that the workshop in Gela that had produced the distinctive West Greek roof for the treasury was no longer in existence, so a Corinthian workshop in the sanctuary was commissioned to make this roof instead. As a result, the porch with its Doric elements and Corinthian roof provided a new orientation for the treasury and a façade that reflected mainland Greek architecture and roofing styles.

Unattributed Architectural Elements

The excavations at Olympia have uncovered more architectural elements and terracotta roofs than can be assigned conclusively to a specific foundation, and they provide additional examples of regional styles for the treasuries. A triglyph–metope block discovered in the Echo Stoa has glyphs with a concave profile that is found in many West Greek buildings, tentatively assigned to the treasury of Sybaris (Foundation VI) (Herrmann 1992: 30). Heiden's

comprehensive study of the architectural terracottas from Olympia has identified at least 67 individual roofs in a variety of styles (Corinthian, Laconian, West Greek, and others) that date from the late seventh century down to the Roman period. Although many have been attributed to specific buildings, other unattributed examples suggest that other cities not mentioned by Pausanias, such as Croton and Paestum, built treasuries at Olympia and provided them with distinctive roofs (Heiden 1995: 162).

Philippeion

In addition to the treasuries built by the Greek cities, Macedonian rulers offered a monument of their own: the Philippeion. This round building with Ionic peristyle stands at the northwestern corner of the Altis (Mallwitz 1972: 128–133). Built in the third quarter of the fourth century BCE to commemorate Philip II, the building has the qualities of a royal cult building as well as a votive dedication. Pausanias (5.20.9–10) attributed its construction to Philip II following the battle of Chaironeia in 338 BCE and described chryselephantine statues of Philip, Alexander, Olympias, Amyntas, and Eurydike. The special circular plan had previously appeared as early as the Archaic Tholos at Delphi (circa 580 BCE), followed by the Tholos in the Marmaria at Delphi (circa 380 BCE); the Philippeion is contemporary with the Tholos in the Sanctuary of Asklepios at Epidauros (circa 330 BCE).

Although the Philippeion is a Macedonian dedication, the architectural details appear to draw inspiration from many sources to create a successful and original design. Stella Miller's study of the features that appear to be stylistically significant suggests that the exterior Ionic column draws from Attic–Ionic and Asiatic forms (1973: 194–201). The entablature has an unusual two-fascia architrave that appears in the fifth-century BCE temples of Athena at Sounion and Apollo at Bassai, as well as fourth-century buildings in Caria and Lycia (Miller 1973: 202–203). The Philippeion also has the first combination of frieze and dentils in the same course, a precedent that was soon followed by the Lysicrates Monument in Athens.

Within the building, nine Corinthian half columns stood on a socle and served to frame the interior space. Mallwitz suggested that the Corinthian half columns are so similar to those from the Temple of Zeus at Nemea and the Temple of Athena Alea in Tegea that they could have been made by the workshop (1972: 133). Miller offers several possibilities regarding the identity of the "Philippeion Master." The architect of this original design might have been from Macedonia, based on the popularity of the chosen forms in later Macedonian architecture or (as she speculates) the combination of styles originated in the Northwest Peloponnese (Miller 1973: 217). In either case, the innovative building provides further evidence of the ways in which ideas

spread to the Sanctuary of Zeus at Olympia and were perhaps disseminated there.

Internationalism at Olympia

In sum, the architecture of Olympia suggests that the Panhellenic sanctuary provided an “international” stage for architectural display and became a center for architectural innovation and the dissemination of styles. The majority of the treasuries were built by Dorian colonies, which underscores Olympia as a focal point for the newer cities to establish their importance in an international setting (Antonaccio 2007: 219). While all of the treasuries at Olympia are Doric, there are many examples of decorative embellishments such as column necking and architrave moldings (Epidamnos) and triglyphs (possibly from Sybaris) that can be traced back to the traditions of the donor city or even the founding city of a colony (Epidamnos and Corfu). The design of the geison, especially the cuttings for ceiling and roofing timbers, varied widely among the treasuries and appears to demonstrate not only a distinct decorative character (moldings) but also a practical quality related to the roof structure.

The roofs, whether terracotta or marble, are the most visible and distinctive characteristic of the buildings. They are also the most indicative of regional style. Some roofs may have been made in the donor city itself and transported to Olympia (Gela), while others were manufactured in Olympia but intended to imitate specific regional styles (treasury of Selinous, porch of Geloan treasury). Close consideration of the design and manufacture of the architecture and roofs suggest that craftsmen from the homeland traveled to Olympia to complete the assembly of a prefabricated roof and supervise the construction of the building (treasury of Gela). Once in Olympia, these skilled workers might have found other commissions in the sanctuary or elsewhere on the Greek mainland (Coulton 1983: 453–456). It is also conceivable that a master builder used local workman to complete his design, thereby training them in new techniques and contributing to the development of building methods at Olympia. The introduction of an innovative design or expensive material in a treasury must have inspired imitation and competition in other buildings.

FURTHER READING

Mallwitz 1972 provides a useful starting point for the scholarship on Olympia, but it is essential to consult the original publication by Adler *et al.* in *Olympia* II (1892), followed by the studies cited here in the *Olympische Forschungen*

(Schleif and Süsserott 1944) and the *Olympia Bericht* (Mallwitz 1961) among others. Herrmann's exhaustive research on the architecture of the treasuries (1976; 1992), especially the blocks that have been discovered in the course of the excavations and dismantling of later structures, has made it possible to identify the individual character of the treasury buildings. His scholarship illustrates a successful methodology for distinguishing significant structural and decorative features of architectural elements found scattered in later contexts and proposing their association with specific buildings. Klein's examination of roof construction proposes using the design of the geison and roof to understand how craftsmen from Sicily may have introduced a new roof structure to the Greek mainland (1998), and Miller's case study of the Philippeion (1973) demonstrates the analysis of individual architectural elements and moldings to investigate questions of originality and influence at Olympia. The study of architectural terracottas and roofs by Mertens-Horn (1988), Heiden (1990; 1995), and Winter (1993), have fundamentally changed our understanding of roof design, decoration, and regional styles in ancient Greece. Heiden's 1995 publication, like Herrmann's study of the architectural elements, provides the data necessary to determine style and association of roofing elements. On the subject of regional styles in archaic Greek architecture, Barletta 1990 and Mertens 1976 are essential. Most recently, Scott 2010 examines the built structures and dedications at Olympia and Delphi.

REFERENCES

- Adler, F., R. Borrmann, W. Dörpfeld, F. Graeber, and P. Graef. 1892. *Olympia II: Die Baudenkmäler von Olympia*. Berlin
- Alcock, S.E. and R. Osborn, eds. 1994. *Placing the Gods: Sanctuaries and Sacred Space in Ancient Greece*. Oxford.
- Antonaccio, C.M. 2007. "Colonization: Greece on the Move, 900–480." In Shapiro, ed., 201–224.
- Barletta, B.A. 1990. "An "Ionian Sea" Style in Archaic Doric Architecture." *AJA*, 94: 45–72.
- Bommelaer, J.-F. 1991. *Guide de Delphes: Le site*. Paris.
- Coulson, W.D.E. and H. Kyrieleis, eds. 1992. *Proceedings of an International Symposium on the Olympic Games, 5–9 September 1988*. Athens.
- Coulton, J.J. 1983. "Greek Architects and the Transmission of Design." In Gros, ed., 453–470.
- Dörpfeld, W. 1883. "Über das Schatzhaus der Sikyonier in Olympia."

MDAI(A), 8: 67–70.

Dyer, L. 1905. "Olympian Treasuries and Treasuries in General." *JHS*, 25: 294–319.

Gros, P., ed. 1983. *Architecture et Société*. Paris.

Hägg, R., ed. 2002. *Peloponnesian Sanctuaries and Cults*. Ninth International Symposium at the Swedish Institute at Athens 1994. Athens.

Heiden, J. 1990. "Die archaischer Dächer von Olympia." In Winter, ed., 41–46.

Heiden, J. 1995. *Die Tondächer von Olympia*. Berlin.

Hellmann, M.-C. 2006. *L'architecture grec 2: Architecture religieuse et funéraire*. Paris.

Herrmann, K. 1974. "Die Giebelrekonstruktion des Schatzhauses von Megara." *MDAI(A)*, 89: 75–84.

Herrmann, K. 1976. "Beobachtungen zur Schatzhaus-Architektur Olympias." In Jantzen, ed., 321–350.

Herrmann, K. 1980. "Bericht über Restaurierungsarbeiten in Olympia: Schatzhaus der Sikyonier." *AA*, 95: 351–360.

Herrmann, K. 1992. "Die Schatzhäuser in Olympia." In Coulson and Kyrieleis, eds., 25–32.

Jantzen, U., ed. 1976. *Neue Forschungen in griechischen Heiligtümern*. Internationales Symposium in Olympia vom 10. bis 12. Oktober 1974 anlässlich der Hundertjahrfeier der Abteilung Athen und der deutschen Ausgrabungen in Olympia. Tübingen.

Jeffrey, L.H. 1961. *The Local Scripts of Archaic Greece*. Oxford.

Klein, N.L. 1998. "Evidence for Western Greek Influence on Mainland Greek Roof Construction in the Archaic Period." *Hesperia*, 67: 383–422.

Laroche, D. and Nenna, M.-D. 1990. "Le Trésor de Sicyone et ses fondations." *BCH*, 114: 241–284.

Lolos, Y. 2011. *Land of Sikyon: Archaeology and History of a Greek City-State*. *Hesperia*, Suppl. 39. Princeton.

Mallwitz, A. 1961. "Architektur eines Schatzhauses." *Bericht über die Ausgrabungen in Olympia VII*, 29–55.

- Mallwitz, A. 1972. *Olympia und seine Bauten*. Munich.
- Marinatos, N. and Hägg, R., eds. 1993. *Greek Sanctuaries: New Approaches*. New York.
- Mertens, D. 1976. "Zur archaischen Architektur der achaischen Kolonien in Unteritalien." In Jantzen, ed., 187–235.
- Mertens, D. 1993. *Der alte Heratempel in Paestum und die archaische Baukunst in Unteritalien*. Mainz am Rhein.
- Mertens-Horn, M. 1988. *Die Löwenkopf-Wasserspeier des griechischen Westens im 6. Und 5. Jahrhundert v. Chr. Im Vergleich mite den Löwen des griechischen Mutterlandes*. Mainz.
- Mertens-Horn, M. and L. Viola, L. 1990. "Archaische Tondächer westgriechischer Typologie." In Winter, ed., 235–250.
- Miller, S.G. 1973. "The Philippeion and Macedonian Hellenistic Architecture." *MDAI(A)*, 88: 189–218.
- Morgan, C. 1990. *Athletes and Oracles*. Cambridge.
- Morgan, C. 1993. "The Origins of Pan-Hellenism." In Marinatos and Hägg, eds., 18–44.
- Moustaka, A. 2002. "On the Cult of Hera at Olympia." In Hägg, ed., 199–205.
- Neer, R.T. 2007. "Delphi, Olympia, and the Art of Politics." In Shapiro, ed., 225–264.
- Philipp, H. 1994. "ΞΑΛΚΟΙ ΤΥΕΟΙ – Eherne Wände." *AA*, 489–498.
- Roux, G., ed. 1984a. *Temples et sanctuaires: Séminaire de recherche 1981–1983 sous la direction de G. Roux*. Paris.
- Roux, G. 1984b. "Trésors, temples, tholos," in Roux, G. ed., 153–171.
- Schleif, H. and H.K. Süsserott. 1944. "Großgriechische Dachterrakotten." In *Olympische Forschungen I*: 83–110.
- Schilbach, J. 1992. "Olympia. Die Entwicklungsphasen des Stadions." In Coulson and Kyrieleis, eds., 33–37.
- Schwandner, E.-L. 1985. *Die ältere Porostempel der Aphaia auf Ägina*. Berlin.
- Scott, M.C. 2010. *Delphi and Olympia: The Spatial Politics of Panhellenism in the Archaic and Classical Periods*. Cambridge.

Shapiro, H., ed. 2007. *Cambridge Companion to Archaic Greece*. Cambridge

Winter, N.A., ed. 1990. "Proceedings of the International Conference on Archaic Greek Architectural Terracottas, December 2–4, 1988." *Hesperia*, 59 (1): 1–323.

Winter, N.A. 1993. *Greek Architectural Terracottas from the Prehistoric to the End of the Archaic Period*. Oxford.

Winter, N.A. 2009. *Symbols of Wealth and Power: Architectural Terracotta Decoration in Etruria and Central Italy 640–510 BC*. Ann Arbor.

CHAPTER 10

Prestige in Greek Sanctuaries: Delphi

Michael Scott

Introduction

In 1993, Nanno Marinatos commented that sanctuaries were “not mere places of worship and pilgrimage, but multidimensional institutions which served the needs of their communities and the needs of the Greek city-state as a whole” (1993: 233). Scholarship since then has continued to improve our understanding of the texture, depth, and dynamism of that multidimensionalism. To focus explicitly on “prestige” – here understood as the demonstration of superior wealth, success, power, and religious devotion in comparison to others – thus entails an explicit focus on only one part (even if an important one) of what went on in sanctuaries. Moreover, to focus on prestige in Greek architecture is to ignore further the multiple ways in which prestige could be put on display in Greek sanctuaries (e.g., through activities such as religious festivals, athletic, musical, and poetic competitions). With these constraints accepted, however, architecture was, without doubt, an important vehicle for the display of Greek prestige. In the first section of this chapter, I look at the ways in which scholarship has characterized and approached the study of such prestige in architecture. In the second section, I set out a series of key issues for its continuing study, which seeks to improve further our grasp on the complexities of the ways in which prestige was articulated, experienced, and perceived through architecture in Greek sanctuaries. These issues will be illustrated by short examples, mostly from the sanctuary of Delphi. In conclusion, I will explore how the issues raised here may help us to understand not only the particular examples in more depth but also the wider changes in approach to prestige in architecture in Greek sanctuaries through the Classical, Hellenistic, and Roman periods.

Prestige: The Story So Far

Scholarship on Greek architecture continues to benefit from a series of in-depth studies produced throughout the twentieth century on the evolution of ancient architectural forms (e.g., Robertson 1943; Dinsmoor 1950; Lawrence and Tomlinson 1996), the continued history of those forms through to the present day (e.g., Adam 1991), and the specific kinds of architecture

encountered in sanctuaries (e.g., Tomlinson 1976; Gruben 2001). Within the framework of understanding provided by these analyses, scholars have sought to understand the motivations behind innovation in architectural style and particular choices for particular structures or within particular sanctuaries. Much discussion, for example, has focused around the emergence of the temple as a monumental building. For Marinatos, the temple represents “not a drastic change in cult practice, but a decision to monumentalise ... the temple becomes the emblem of the city state, the very manifestation of its power and prestige” (1993: 229). A.J. Spawforth, in his recent reanalysis of Greek temples, agrees that the emergence of the temple in the late eighth century BCE should be seen as a response to the need for a new type of collective religious building to reflect and articulate the new political community (2006: 22). (See also [Chapter 2](#) and [Chapter 3](#).)

The role of temples in what we might term “prestige politics” continued long after their first emergence. Their conspicuous location and obvious expense, and the length of time necessary for a project to be completed marked out the exceptionality of temples in the ancient landscape (Spawforth 2006: 6). So too do the sheer statistics. We know of only just over 100 temples from the sixth and fifth centuries BCE, but there were 200 Greek state members of the fifth-century Athenian alliance and over 1000 poleis in the ancient world (cf., Spawforth 2006: 34). Even allowing for a good number of unknown temples, the numbers still point to their exceptional nature, and, thus, the prestige they carried. Temples offered prestige for their patrons, be they tyrants (e.g., Peisistratos in Athens or Polykrates on Samos) or the political communities for whom they were probably the largest ever single financial undertaking (Davies 2001).

Temples also offered a means of competitive display between communities. They could themselves be military victory celebrations paid for with plundered booty from a Greek-versus-Greek conflict (e.g., the fifth-century BCE Temple of Zeus at Olympia). Or cities could compete with one another to have the largest temple, as the often-cited example of the sixth-century BCE Temple of Artemis at Ephesos and the slightly bigger Temple of Hera on Samos completed just a few years later underlines. It was not just temples, however, that worked to articulate prestige. Whole sanctuaries need also to be understood as prestige political markers, setting out ownership over the landscape (Alcock and Osborne 1994; de Polignac 1995). This interactive competitive display through architecture was labeled “peer-polity interaction” by Snodgrass (1986), who applied it not only to temples but also to all sorts of sanctuary architecture, sanctuaries, and particularly the competitive display by different cities and individuals inherent within particular sanctuaries, namely the “Panhellenic” sanctuaries of Delphi and Olympia, as part of the wider competitive culture that defined the Greek world (cf., Marinatos 1993: 229). The later development of these Panhellenic, “inter-urban,” sanctuaries, in

comparison to urban and extra-urban ones, has long been noticed (Kilian-Dirlmeier 1985). Scholars have stressed the importance of prestige competition in assuring their emergence (Morgan 1990, 1993) and, at the same time, their part in developing a role for sanctuary architecture not simply as the mark of an individual community but also of Greekness (and consequently the “prestige of Greekness”) itself (Spawforth 2006; Emerson 2007: 1).

It seems, then, that prestige was omnipresent in Greek architecture, as well as in whole sanctuary complexes, within the Greek world. Yet some scholars have more recently sounded warning notes about the overemphasis of prestige (or at least a political sense of prestige) as the motivating factor in these structures and spaces. In particular they argue for the reinstitution of a primarily religious inspiration for temple and sanctuary architecture (Pedley 2005: 57–77), even if that religious inspiration is sometimes indivisible from a more political one, as is implied in inscriptions that tie the creation of a temple to enabling more magnificent celebrations of ritual (Spawforth 2006: 10–2, 106). A similar warning note for the overly political interpretations of religious architectural sculpture has been sounded (Ridgway 1999; Hölscher 2009). More importantly, for both architecture and architectural sculpture, there has been gathering concern over the ways in which we can (and should) “read” their “messages,” and balance the simultaneous similarity of much architecture and sculptural themes with the individual originality of particular structures and pieces (Spawforth 2006; Emerson 2007; Scott 2007; Hölscher 2009).

In what follows I expand on these concerns by examining a series of issues which, in my view, need to be more often considered when discussing prestige in architecture. These proposed lines of investigation may help to improve our understanding of the changing place of prestige in Greek architecture. The issues are divided into those pertaining to a particular structure, those to do with the interpretation of the structure in its spatial setting, and those to do with how the structure is experienced by multiple kinds of viewers over time.

The Structure Itself

What rights did a dedicator have to design and place their structure as they saw fit? Scholarship has often focused on the importance of the design and placement of a particular structure for our reading of the message of the building. Much is made, for example, of the location of particular treasuries at Delphi within highly visible spaces (known as *ephiphanestatoi topoi*). Indeed

R. Tomlinson argued that for most at Delphi “it was preferable to be in places where people were in fact most likely to notice them” (1976: 67). Much analysis of meaning has been based on the premise that the design of the building (as well as the themes of its sculpture) was a free choice for the dedicator (Neer 2003). Yet such a free hand in design and placement is by no means a given. While dedicators within their own cities can be understood to have had the liberty to do as they liked, those wishing to erect structures in other cities’ sanctuaries, or in the Panhellenic sanctuaries, may well not have enjoyed the same freedoms. W.W. Tarn, in reference to stelai, has argued that the best a city seeking to put up a structure in another city’s sanctuary could do was to ask for an *epiphanestaton topon*, but it was by no means guaranteed that it would be granted (1924: 148–49).

At Olympia and Delphi, their very different and (particularly for Delphi) complex management structures, especially during the Archaic and Classical periods, created very different degrees of license, depending also on the political weight of the dedicator and political situation at the time of dedication (Scott 2007; 2010: 29–40). This varying attitude to freedom of design and placement continued at Delphi into the Hellenistic period. In the third century BCE, for example, while the Delphic ruling council, the Amphiktyony, banned the placement of dedications within the stoa of Attalos, the stoa had itself been the first building in the sanctuary’s history to be placed dramatically across the sanctuary’s temenos boundary. This was not simply a case of indulging the whim of a Hellenistic monarch. In the same century, the Amphiktyony was happy to delegate responsibility for the placement of other dedications to the polis of Delphi, and for stelai to a resident family (*Corpus d’Inscriptions de Delphes* [CID] 4.85, Amphiktyony responsible; CID 4.27, responsibility to the Delphic polis; CID 4.44, to resident family). As a result, we cannot safely begin our interpretation from the standpoint that dedicators were able to do as they pleased. We need to consider more closely the (sadly often fragmentary) evidence for the ability of a dedicator to orchestrate the design and placement of their structure in a particular sanctuary at a particular time if we want to understand properly the parameters within which those structures had to operate, and thus the messages of prestige they could carry.

To what extent were the inscribed records for financing and constructing a particular building on display to its viewers? Scholarship has often been interested in the methods by which a sanctuary’s architectural structures were financed: it could be by single individuals or families (such as the Alkmaionids’ decision to offer money for the sixth-century BCE Apollo temple at Delphi); through international collaboration (as in the fourth-century BCE Apollo temple at Delphi); or through the proceeds of empire (as in the Parthenon at Athens) alongside a range of other methods. But those interested in the prestige of the resulting buildings often forget to think about the degree to which this information was available to subsequent viewers of the building

and thus played a part in their reading of its prestige. The fourth-century BCE Apollo temple at Delphi, for example, was surrounded by stelai commemorating the members of the international Greek community who had given money (and what amount). The temple's prestige was thus enhanced by a continually viewable record of the number, and wide-ranging geographical origin, of people involved in its construction (*CID* 2.1–30). At the same time, the absence of certain benefactors from these lists would also have been marked (e.g., Athens did not contribute). The stelai thus not only augmented the prestige of the structure but also orientated its prestige to reflect well on some poleis and more negatively on others.

Scholarship has often focused on using building accounts to reconstruct the processes of construction (e.g., Burford 1969; Coulton 1977). But what difference did it make to the reading of the building's prestige when those varying processes of construction were on display alongside the building? At Lebadeia, the temple was accompanied by 16 slabs, each 2 m high, covered in inscriptions (e.g., *IG* VII 3073) relating to its building which demonstrated clearly its long, expensive, process of construction (Scranton 1960: 172; see also [Chapter 14](#)). At Epidauros, for those interested, the building accounts (e.g., *IG* IV2 102–103) outlined how the Epidaurian authorities were micromanagers in comparison to those in other sanctuaries like Delphi (Feyel 2006: 410–11), which perhaps could be understood as the Epidaurians demanding and displaying an intense interest and pride in every aspect of *their* constructions. At Athens, Christophe Feyel demonstrates through the published accounts that the workforce was overwhelmingly Attic in origin, in comparison to other sanctuaries throughout Greece, where labor was not overwhelmingly supplied from the region in which the sanctuary was being constructed (2006: 356), and yet the payment accounts on display for the Erechtheion on the Acropolis (*IG* I³ 474) demonstrated how freeman, slave, and metic had worked side by side on the building and its sculpture, a combination perhaps to be taken as underlining both the very Athenian and very democratic communal nature of the structures. The inscribed records also had a legal aspect in that they conveyed the information that the magistrates who were charged with the oversight of operations had carried out their duties properly.

In contrast, on the steps of the sixth-century Temple of Apollo at Syracuse, an inscription claimed the building and its columns as the masterpieces of at least one and perhaps two named architects (Berve and Gruben 1963: 416; Guarducci 1987; Lippolis, Livadiotti, and Rocco 2007: 839–41), diverting the prestige of the building away from the community towards the individual. Yet this is the only Greek temple that bears something like an artist's "signature," and some scholars interpret it as the donor's name instead. In the fourth century BCE in Piraeus, specifications for the construction of an enormous naval arsenal (in which tackle and gear for ships could be dried and stored)

was inscribed on a stele set up directly by the structure. The text singles out Philo and Demetrios as responsible for its design (*IG II²* 1668; for the surviving inscriptions relating to the responsibility of individuals for their constructions see Hellmann 1999). Parts of the building have been found, and the arsenal itself was listed on some later Hellenistic “wonder-lists.” Much attention has been given to the increasing visibility of the architect and artist over time, and the responsibility they were openly accorded for their work (Gros 1983; Blondé and Muller 1998; Tanner 2006). The degree to which that responsibility was openly recorded and publicized must have had an impact not only on the interpretation and attribution of the prestige inherent in a particular structure but also, over time, on the general sense of who was responsible for prestige across architecture, architectural sculpture, and free-standing sculpture, and on whom that prestige reflected most as a result.

The Space around the Structure

How does the structure interact with the structures and space around it at the time of its construction in order to demonstrate its prestige? To understand fully the prestige of a particular structure, it needs to be situated first in its full spatial context, rather than studied in isolation, and, second, in its full spatial context appropriate to the time at which it was constructed. Excavation reports do not often make it easy to reconstruct all aspects of an individual structure (e.g., at Delphi the excavation reports split a building’s architecture from its architectural sculpture and its inscriptions into separate volume series), let alone the different structures, which occupied a particular space at a particular time. At Delphi, this is also due to the overwhelming reliance on the Delphi that Pausanias saw and described in the second century CE, a snapshot of the sanctuary after 800 years of development ([Figure 10.1](#)). As a result, chronological period maps of the major structures and dedications at Delphi are surprisingly hard to come by, and it was only recently that the first complete set for the Archaic and Classical periods was produced (Scott 2010). Yet what such a spatial and chronological investigation reveals is the important and subtle ways in which architecture was designed to respond to other structures around it. For example, the architectural and artistic simplicity and severity of the fourth-century BCE Theban treasury at Delphi in the southwest corner of the Apollo sanctuary may look, in isolation, like a poor “prestige” performance. Yet the Theban severity actually contrasts with the showy excess of the earlier victory monuments of the Spartans at the sanctuary’s southeast corner. The Thebans gained prestige and up-staged their wartime enemy through the employment of a simpler architectural style, which, in turn, set up the Spartans’ earlier showy extravagance to be understood not as prestigious but as architectural and artistic hubris ([Figure](#)

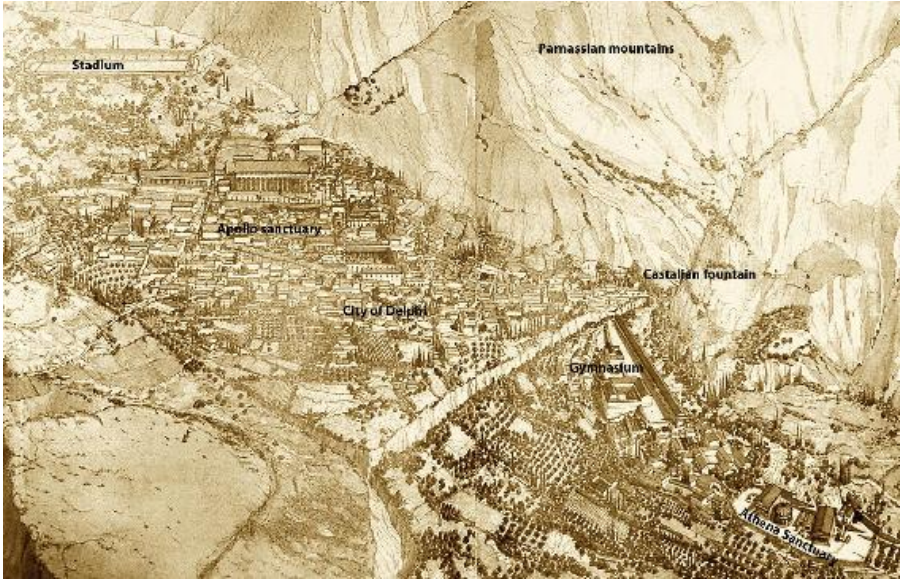


Figure 10.1 General plan of sanctuary areas at Delphi.

Source: M. Scott.



Figure 10.2 Model of Sanctuary of Apollo at Delphi, with labels added.

Source: M. Scott.

An understanding of the prestige message of a particular structure needs to concentrate on more than simply the structures around it at the time of its construction. It should also take into account the ways in which the particular nature of the space encouraged certain forms of architecture. At Delphi, where the landscape is steep and treacherous and had to be turned into usable terraces for sustained building, dedications, as a result, often find themselves bunched together and only visible at an acute angle. Thus, a particular feature of Delphic architecture is the high bastions of many of the treasuries. In the late sixth century BCE, many new treasuries were built purposefully on the remains of the old temenos walls, in order to avail themselves of a readily available height from which to be seen, as for example, the Theban and Cyrenean treasuries in the fourth century. Many of the architectural dedications specifically responded to the need for height to be visible (e.g., the Naxian Sphinx's column is a natural example, as are the number of tall dedications around the temple terrace, especially the Rhodian column). At Olympia, in contrast, in its flat, open landscape, such tall individual dedications (e.g., the Nike of the Messenians and the Naupaktians) were very much in the minority.

Nor is it simply a question of the gradient of the landscape. Any reading of prestige in architecture within a specific sanctuary should take into account the specific dedicatory dynamics and trends of that sanctuary, in order to compare and contrast and, thus, judge the “prestige effect” of a particular structure within that particular sanctuary. At Delphi, treasuries were often located in *epiphanestatoi topoï* and were constructed in varied materials with diverse and often very elaborate sculpture. At Olympia, however, treasuries were restricted to a single row, none were in marble, and few had sculpture (see [Chapter 9](#)). Thus, if we were comparing these structures within a manual on architecture, a treasury structure at Delphi would seem to have offered a much wider degree of potential for delivering a prestige message than one at Olympia. Yet we cannot simply discount treasuries at Olympia as prestige items because of their poor visibility or decoration in comparison to those at Delphi. Within the specific framework of what was possible at Olympia, comparative prestige, for example, was still possible (e.g., the Geloan treasury was not only given sculpture but also expanded after its initial construction).

All of these factors contributed towards the development of particular architectural and spatial strategies for prestige at particular times in particular sanctuaries. At Delphi, those strategies morphed from increasing architectural elaboration within a single structure, like a treasury in the sixth century, towards spatial monopolization of both “halves” of the sanctuary (that above and below the temple terrace) with as many different kinds of architectural and sculptural dedications as possible in the first half of the fifth century, to spatial, architectural and artistic “opposition” in the second half of the fifth century, in which dedications (and dedicators) unambiguously “faced-off”

against one another (Scott 2008; 2010). In the fourth century BCE, that spatial opposition could on occasion turn into architectural “battle.” The Spartan stoa at the southeast entrance to the sanctuary was actively cut into by the Argive semicircular dedication next to it, thereby not only damaging the Spartan dedication but also cutting off one of its entrance points and thus restricting its usability (Bommelaer 1971a; 1971b).

While we should judge the architecture of a particular structure within the context of its particular space, to understand what its dedicators sought to achieve through that dedication also requires us to be aware of what they have built elsewhere. Sparta is a useful example. As Thucydides famously commented (1.10), in Sparta itself, elaborate architecture was rare if not nonexistent, and future generations would be misled if they guessed at Sparta’s power based on the (negligible) monuments. Sparta’s early dedications at the Panhellenic sanctuaries were also fairly modest. Yet after the Spartan defeat of Athens at the end of the Peloponnesian War, its dedications at Delphi challenged Athenian offerings in every degree of architectural (and sculptural) elaboration: Spartans built an enormous statue group and stoa amid a plethora of other offerings; nonetheless, at home the anti-prestige style of its architecture persisted. Through an understanding of Sparta’s traditional approach to prestige in architecture, its change in direction, particularly at Delphi, becomes much more significant. It underlines the way in which Sparta felt compelled to engage and compete architecturally for prestige within this particular space at this particular moment of victory.

The Experience of the Structure Over Time

How was the structured experienced and understood by its viewers over time?

A famous saying among architects is that people never use or understand buildings in the way they were intended. To understand fully the prestige of a particular structure, therefore, we need to be aware of both its *intended* meaning, put forward by its dedicators at the time of its construction, and its *perceived* meaning among those who viewed and experienced it then and those who did so later.

The concept of the “viewer” is, however, a complex one. As much recent scholarship has argued, particularly about the interpretations of art and architecture, viewers bring different levels of knowledge, experience, and interest, and engage with them in different ways. Though the chorus in Euripides’ *Ion* seems particularly keen to see everything around them when visiting the sanctuary at Delphi (*Ion* 184–218), it is unlikely that viewers each engaged with the architecture and art in the same way or to the same depth or came to more than the same general interpretations of the prestige of particular structures. The dialogues of Plutarch at Delphi stress this point

clearly (*Mor.* 384–438). The different members of the tour party not only react very differently to some of the dedications (particularly to dedications by the courtesan Rhodopis (*Mor.* 401)) but, in other cases, are also utterly perplexed about the meaning of some particular objects (e.g., the dedications inside the Corinthian treasury (*Mor.* 399F–400D)).

Even more of a concern is whether they engaged with the structures and their complexities at all. As Tonio Hölscher has recently argued (about the interpretation of architectural sculpture), the notion that structures delivered intense propagandistic messages presupposes that everyone engaged with those structures intensely (2009: 54). More importantly, much of the nuance of architectural style, and particularly architectural sculpture, is to be found in places on buildings that make such intense viewings practically difficult. A well-known example is a viewer's (in)ability to view the Parthenon frieze obscured by the Parthenon's outer columns and the lack of light at the architrave level (Osborne 1987; Marconi 2009). It was not only large temples for which such problems occurred but also smaller structures. At Delphi, for example, the south side of the Siphnian treasury was obscured to viewers, except for a distant view from far away, since it was right up against the temenos wall, and the north side of the Athenian treasury was difficult to access and view (Hölscher 2009: 56). As a result, not only the traditional placing of architectural and sculptural detail on the structure but also the sheer difficulty of viewing the structure as a whole made the comprehensive perception of the architecture and architectural sculpture, and, thus, the engagement and interpretation of its message of prestige, as Hölscher puts it, "uncomfortable" (2009: 56). Perhaps the intender viewer, then, was divine, rather than human.

Understanding the way in which a structure was experienced and perceived, however, requires a consideration both of the multiplicity of different types of viewers and degrees of their engagement and also of the ways in which the encounter between structure and viewer were created within the landscape. In part, that involves understanding the sorts of impressions made upon the viewer before they arrived at the particular structure in question. At Delphi, that physical impression began when viewers were still well outside the sanctuary. Today, as in the ancient past, the clefts of the mountainous landscape actually hide the sanctuary from plain sight until the visitor rounds the final corners of the road and is suddenly presented with the sanctuary at close quarters in all its glory. The landscape conspires to ensure the sanctuary, and its architectural structures, make a sudden and dramatic impression on visitors, only increasing the value of their prestige in comparison to other sites (Figure 10.3).



Figure 10.3 Reconstruction of the Sanctuary of Apollo at Delphi, by A. Tournaire (circa 1890).

Source: M. Scott.

The construction of the experience of a particular structure also depends fundamentally on time. No space remains static, although a building's structure and style, once completed, is even less static. Thus, as the space around a particular building develops and changes over time, the relationships between it, the surrounding space, and other structures created at its inception may be denied, supplanted, and intensified, at the same time that new relationships and comparisons are created, which may never have been intended, or indeed foreseen, by its dedicators. The Theban/Spartan example which we looked at earlier is a clear case of this: the Spartan extravagance – prestigious at the time as a response to previous Athenian ostentation – was restyled as hubristic excess through the Theban return to “prestigious” simplicity. At Olympia, the construction of the Metroön temple in the fourth century BCE directly in front of the line of sixth-century treasuries masked at least some of them from plain sight, reducing substantially the impact they could have on the sanctuary and thus their prestige.

Over time, sanctuaries became extremely crowded places, because dedications traditionally could not be discarded outside the temenos once they had been set up as gifts to the gods. Different sanctuaries employed different strategies to deal with the resulting clutter. In some sanctuaries, increasing numbers of laws were passed about where dedications could be put (Pl. *Leg.* 909e–910a; *LSS* 107, Rhodes third century BCE). In others, such as Olympia, there were regular processes of burying dedications (particularly sculpture and dedicated weaponry) in pits and wells dug to supply the games, as well as using them

for bulking up the spectator stands of the stadium (Mallwitz 1988). At Delphi, in contrast, relatively few burials of dedications are known, yet dedications were sometimes moved around within the sanctuary to make way for new pathways of movement and constructions (e.g., the northeast corner of the temple terrace was rearranged in the mid-fourth century BCE and its dedications replaced to create a new access path to the north of the sanctuary), thus enforcing new sets of architectural relationships. Therefore, while at Olympia, a long-term “shelf-life” for a dedication (and thus the life-span of its prestige) could not be guaranteed, at Delphi, things, though moved around, traditionally remained on display for longer periods. In turn, this meant that they were experienced and understood through an increasingly complex clutter of dedications from a variety of different periods and could potentially be moved to exist within spaces for which they were never originally designed.

Over time, a structure’s environment and the ways in which it interacted with its surroundings could change fundamentally. And it is that changing experience that the viewer engaged with they came to “read” a building. Viewers, at any time other than that immediately following a building’s construction, did not experience a structure in its original chronological setting but approached it via its current geographical position. In their engagement with the prestige messages of particular building, viewers would thus be comparing structures from different chronological periods. As a result, older dedications may have gained or even lost part of their prestige: older structures may have been held in greater reverence than that which they were given at the time of their construction, thanks to their age, but, equally, they may have paled into comparison with more recent, advanced, architectural techniques and styles. At Delphi, in the Athena sanctuary, for example, the temples of Athena were not built over each other as the Apollo temples were but instead they were constructed (almost) side by side. Explicit comparison was thus possible in a way denied in the Apollo sanctuary. Yet both temples were also eclipsed by the construction of the fourth-century Tholos (circa 380 BCE), which dynamically “upped” the prestige stakes in terms of its architecture and architectural sculpture. All of these buildings were constructed in a single line, encouraging visitors to compare and contrast them, despite their vast chronological span.

It was not only the space and spatial relationships around a particular building that changed over time, however. So too did the viewers’ potential pathways of movement around the site and their ability to consider building in particular ways and from particular directions. Pausanias’, visit to Delphi in the second century CE began by passing the Athena sanctuary and entering the Apollo sanctuary in its southeast corner before taking the rather steep Sacred Way that winds up through the sanctuary to the temple terrace. Interestingly, this linear progression and experience contrasts heavily with Pausanias’ approach

to Olympia, where, because of the flat open ground, he was able to complete several circuits as part of his tour, seeing altars, then Zeus statues, then athletic statues. At Delphi, Pausanias' linear movement along the Sacred Way ensures that he must engage with the sanctuary's different structures according to their geographical order, a sequence that is a-chronological and a-typological, which Tomlinson argued "must have created different stages of awareness within the sanctuary" (1976: 70). But this enforced zig-zag pattern of movement through the sanctuary, according to the latest Delphic scholarship, is actually a rather late (Roman) construct (Jacquemin 1999: 32–3). For much of the Classical period, while the Sacred Way was available as a route through the sanctuary, there was also a series of entrance gates through the temenos walls to the different terraced levels of the sanctuary (e.g., the Siphnian treasury and fourth-century BCE Theban treasury orientate themselves towards the southwest entrance rather than the southeast). These different entrances, combined with a numbers of different paths and staircases connecting the different terraces, allowed for a much greater freedom of movement for viewers, who could choose how they wanted to engage with the sanctuary and its buildings.

The experience and perception of prestige messages through architecture was complex, depending on the experience, knowledge, and interest of the viewer, their physical ability to view and engage with, among other things, distant parts of larger structures and inaccessible sides of smaller ones, their freedom to move around the sanctuary following a multitude of pathways, as well as the way in which the space around a particular structure changed over time and how that structure compared and contrasted with others around it. All these factors had an impact on the continually changing ways in which the prestige of a particular building was experienced and perceived, which ultimately could be dynamically different to the prestige intended by a structure's original dedicators.

This on-going production of perceived meaning could also affect the physical nature of the buildings themselves: they could be changed (indeed "hijacked") by others, or "updated" by their original dedicators. The most obvious example of hijacking at Delphi is the way in which the architecture of the sixth-century BCE Apollo temple was exploited by the Athenians as a backdrop for their display of captured shields, thus tying Athens into the natural prestige and value of the temple and using it as a canvas for the advancement of their own individual military prowess.

Occasionally, however, such hijacking could also increase the prestige of the original monument. Delphi is known for the thousands of inscriptions that cover its many walls, often left by dedicators not able to afford their own statue or object (for the importance of inscriptions as "features" of architecture, see Butz 2009). What is interesting is that dedicators from particular places seem to have felt drawn to have their inscription set up on a

building also dedicated by that same place. The Athenian treasury is a clear example: almost all of the hundreds of inscriptions covering the building relate to Athenians, and a similar percentage of inscriptions on the Theban treasury belonged to Thebans. As a result of the use made of these structures over time, they were able to exhibit an increasingly strong message of Athenian prestige and continued pride in the city on the part of its citizens. The opposite, however, was true for the Siphnian treasury. It too is covered in inscriptions, but only one of them refers to Siphnos. The treasury had been the most ornate, prestigious architectural structure in the sanctuary at the end of the sixth century. Over time, however, following the demise of its dedicators, because of a flood of their island's rich mines, their dedication, it seems, had become a general noticeboard for others (Jacquemin 1999: 224–26). The prestige of its architecture was thus diminished over time by the use to which the structure was (allowed to be) put.

Dedicators could return to their structures to update them, in order to ensure they continued to convey a message appropriate to the (changing) surroundings. We have already seen how at Olympia the Geloans came back to their treasury to add an extra wing to it to ensure its continued prestige. At Delphi, the Spartans, when their Peloponnesian victory monuments were spatially, architecturally, and artistically opposed in the fourth century BCE by Argive and Arcadian dedications, returned to inscribe a new victory epigram by Ion of Samos on their original dedication to increase their prestige and match that now on display nearby (*FD* 3.1.50). The Tarentines also returned to both of their fifth-century dedications a century later. Theirs in the lower half of the sanctuary was reinscribed, and theirs by the temple terrace was cleaned of inscriptions placed on it by other individuals and reinscribed, perhaps as part of move to bolster their claims to be worth of leadership of Italian *koine*, at that time threatened by the Thourians (Jacquemin 1999: 219, n. 55).

But perhaps the subtlest example of such manipulation of the prestige through viewer perception was carried out by the Orneates of the Argolid. In the fourth century BCE, they chose to offer a statue group commemorating a victory that had taken place in the sixth century. The style of their victory monument was archaizing, but its placement within the sanctuary was also carefully coordinated to ensure that it snubbed fourth-century “arenas” of dedication and, instead, located itself within an older area that had been popular in the sixth century BCE. The Orneates had manipulated the gathering “historical storyboard” of Delphic monuments specifically in order to engender historical prestige for their new/old victory (Scott 2010: 139–40).

Conclusions

Here I have highlighted some of the issues that should be taken into account when considering the nature and messages of “prestige” in architecture in Greek sanctuaries. Current scholarship has underlined the way in which such structures could deliver strong political messages of prestige, identity, and ownership, but it has also voiced concern over the continued primacy of political rather than religious motivations for sanctuary architecture. In this article, I hope to have shown not only how any investigation of prestige – and indeed any aspect of the meaning of architecture – needs to take into account a much wider set of issues, which help to construct with more texture and depth not just the “message” put forward by a structure at the time of its creation but also the multitude of ways in which any message could be perceived and experienced by different viewers over time, and the degree to which it could change dynamically as a result. Prestige is not a static thing. It continually oscillates and varies, and the dedicator of a structure did not have full control over how a monument would be perceived by future viewers.

Also significant are the changing ways in which messages about prestige were delivered, within sanctuaries (as opposed to other genres of space), within Delphi in particular, and within different periods. For example, it has been argued that sanctuaries offered the potential for a wider range of types of architecture than a civic space like an agora, which was ultimately dominated by a variety of stoas and stoa-like structures (Arnheim 1977: 206). Inter- and extra-urban sanctuaries in particular offered spaces well imbued with potential for comparative prestige-display precisely because they attracted dedicators from different places to a single space. These Panhellenic sanctuaries, owing to the particularities of the landscape and the management of each, as well their role(s) in Greek culture, developed their own particular customs in prestige-display (e.g., at Delphi from spatial monopolization to spatial opposition in the fifth–fourth centuries BCE). Yet it is also clear that strategies of prestige, and the architecture which proclaimed it, responded to changing patterns of use through the Classical, Hellenistic, and Roman periods. Temples increasingly lost emphasis as primary carriers of civic pride as poleis began to utilize an increasingly wide variety of public buildings that could carry that message equally well (Spawforth 2006: 107). In turn, the value of older temples as prestigious spaces in which to locate and, thus, to confer status on smaller new dedications (particularly honorary statues) only continued to grow. And in the Hellenistic and Roman periods, changes in architectural styles allowed for the previously “out of reach” elements in prestigious architecture, such as architectural sculpture, to take up positions that were visually much more central and thus to carry more “intense” messages to a wider audience (Hölscher 2009: 63–7).

I think we need to be much more cautious in how we label the way particular sanctuaries worked and what they offered. Implicit in the division within this Companion between chapter studies of “internationalism” of Olympia and

“prestige” at Delphi is a sense that Olympia was the place where unity was on display and Delphi where disunity was the keynote (Rups 1991: 85). What I hope to have underlined here is that such blanket divisions lose meaning and sense when considered against the backdrop of the continually changing ways in which so many diverse architectural and artistic messages were created, perceived, and interpreted. Greek sanctuaries, and the architecture they contained, are just far too “multidimensional” to be constrained by any single label, a fact that will continue to make them such fascinating subjects of study for a long time to come.

FURTHER READING

For work on the place and role of sanctuaries in the wider landscape: Scully 1969; Alcock and Osborne 1994; de Polignac 1995. For discussion of strategies of interpretation for architecture try Arnheim 1977; Sanders 1990; Agrest 1991; Jones 2000a and 2000b. For discussions of architecture at Delphi, see the excavation report series (*Fouilles de Delphes*), *Guide de Delphes* (Bommelaer 1991), continuing articles in the journal *Bulletin de Correspondance Hellénique*, as well as several *BCH* Supplement volumes. See also Tomlinson 1976; Holmberg 1979; Morgan 1990; Pedley 2005; Scott 2010, 2014. For discussions of the construction and finance of buildings in Greek sanctuaries and elsewhere see Scranton 1960; Burford 1969; Davies 1998 and 2001; Feyel 2006. For discussion of the changing position of architects and artists in ancient Greek society see Burford 1972; Coulton 1977; Gros 1983; Tanner 2006. For collections of inscriptions relating to Greek architecture see Hellmann 1992 and 1999.

REFERENCES

- Adam, R. 1991. *Classical Architecture: A Comprehensive Handbook to the Tradition of the Classical Style*. New York.
- Agrest, D. 1991. *Architecture from Without: Theoretical Framings for a Critical Practice*. Cambridge, MA.
- Alcock, S.E. and R. Osborne, eds. 1994. *Placing the Gods: Sanctuaries and Sacred Space in Ancient Greece*. Oxford.
- Arnheim, R. 1977. *The Dynamics of Architectural Form*. Berkeley.
- Austin, M., J. Harries, and C. Smith, eds. 1998. *Modus Operandi: Essays in Honour of Geoffrey Rickman*. London.
- Benedetti, S., ed. 1987. *Saggi in onore di Guglielmo De Angelis*

d'Ossat. Quaderni dell'Istituto di Storia dell'Architettura, n.s., 1–10. Rome.

Berve, H. and G. Gruben 1963. *Greek Temples, Theatres and Shrines*. London.

Blondé, F. and A. Muller, eds. 1998. *L'Artisanat en Grèce ancienne: Les artisans, les ateliers*. Topoi 8.2. Paris.

Bommelaer, J.F. 1971a. "Le Monument de Lysandre à Delphes." *REG (Actes de l'Association)*, 84: xxii–xxvi.

Bommelaer, J.F. 1971b. "Les Navarques et les successeurs de Polyclète à Delphes." *BCH*, 95: 43–64.

Bommelaer, J.F. 1991. *Guide de Delphes: Le site*. Paris.

Burford, A. 1969. *The Greek Temple Builders at Epidauros*. Liverpool.

Burford, A. 1972. *Craftsmen in Greek and Roman Society*. London.

Butz, P.A. 2009. "Inscription as Ornament in Greek Architecture." In Schultz and von den Hoff, eds., 30–9.

Coulton, J.J. 1977. *Greek Architects at Work: Problems of Structure and Design*. Ithaca.

Davies, J.K. 1998. "Finance, Administration and Realpolitik: The Case of Fourth-Century Delphi." In Austin, Harries, and Smith, eds., 1–14.

Davies, J.K. 2001. "Rebuilding a Temple: The Economic Effects of Piety." In Mattingly and Salmon, eds., 209–29.

de Polignac, F. 1995. *Cults, Territory and the Origins of the Greek City-State*. Chicago.

Dinsmoor, W.B. 1950. *The Architecture of Ancient Greece: An Account of its Historic Development*. 3rd ed. New York.

Dougherty, C. and L. Kurke, eds. 2003. *The Cultures Within Ancient Greek Culture: Contact, Conflict, Collaboration*. Cambridge.

Emerson, M. 2007. *Greek Sanctuaries: An Introduction*. Bristol.

Feyel, C. 2006. *Les Artisans dans les sanctuaires grecs aux époques classique et hellénistique à travers la documentation financière en Grèce*. Paris.

Gros, P., ed. 1983. *Architecture et société: De l'archaïsme Grec à la fin de la république Romaine*. Rome.

- Gruben, G. 2001. *Griechische Tempel und Heiligtümer*. Munich.
- Guarducci, M. 1987. "Il tempio arcaico di Apollo a Siracusa: Riflessioni nuove." In Benedetti, ed., 43–5.
- Hellmann, M.-C. 1992. *Recherches sur le vocabulaire de l'architecture grecque, d'après les inscriptions de Délos*. Paris.
- Hellmann, M.-C. 1999. *Choix d'inscriptions architecturales grecques*. Lyon.
- Holmberg, E.J. 1979. *Delphi and Olympia*. Gothenburg.
- Hölscher, T. 2009. "Architectural Sculpture: Messages? Programs? Towards Rehabilitating the Notion of Decoration." In Schultz and von den Hoff, eds., 54–67.
- Jacquemin, A. 1999. *Offrandes monumentales à Delphes*. Paris.
- Jones, L. 2000a. *The Hermeneutics of Sacred Architecture. Vol. 1: Experience, Interpretation, Comparison*. Cambridge, MA.
- Jones, L. 2000b. *The Hermeneutics of Sacred Architecture. Vol. 2: Hermeneutical Callisthenics*. Cambridge, MA.
- Kent, S., ed. 1990. *Domestic Architecture and the Use of Space*. Cambridge.
- Kilian-Dirlmeier, I. 1985. "Fremde Weihungen in griechischen Heiligtümern vom 8. bis zum Beginn des 7. Jahrhunderts v. Chr." *JRGZ*, 32: 215–54.
- Lawrence, A. 1996. *Greek Architecture*. 5th ed., revised by R. Tomlinson. London.
- Lippolis, E., M. Livadiotti, and G. Rocco. 2007. *Architettura greca*. Milan.
- Mallwitz, A. 1988. "Cult and competition locations at Olympia." In Raschke, ed, 79–109.
- Marconi, C. 2009. "The Parthenon Frieze: Degrees of Visibility." *RES*, 55/56: 157–73.
- Marinatos, N. 1993. "What Were Greek Sanctuaries? A Synthesis." In Marinatos and Hägg, eds., 228–33.
- Marinatos, N. and R. Hägg, eds. 1993. *Greek Sanctuaries: New Approaches*. London.
- Mattingly, D.J. and J.B. Salmon, eds. 2001. *Economies beyond*

Agriculture in the Classical World. London.

Menozzi, O., M. Di Marzio, and D. Fossataro, eds. 2008. *SOMA 2005*. Proceedings of the IX Symposium on Mediterranean Archaeology. Oxford.

Morgan, C. 1990. *Athletes and Oracles: The Transformation of Olympia and Delphi in the Eighth Century BC*. Cambridge.

Morgan, C. 1993. "The Origins of Pan-Hellenism." In Marinatos and Hägg, eds., 45–61.

Neer, R.T. 2003. "Framing the Gift: the Siphnian Treasury at Delphi and the Politics of Public Art." In Dougherty and Kurke, eds., 129–52.

Osborne, R. 1987. "The Viewing and Obscuring of the Parthenon Frieze." *JHS*, 107: 98–105.

Pedley, J. 2005. *Sanctuaries and the Sacred in the Ancient Greek World*. New York.

Raschke, W.J., ed. 1988. *The Archaeology of the Olympics: The Olympics and Other Festivals in Antiquity*. Wisconsin.

Renfrew, C. and J.F. Cherry, eds. 1986. *Peer-Polity Interaction and Socio-Political Change*. Cambridge.

Ridgway, B.S. 1999. *Prayers in Stone: Greek Architectural Sculpture ca. 600–100 B.C.E.* Berkeley.

Robertson, D.S. 1943. *A Handbook of Greek and Roman Architecture*. Cambridge.

Rups, M. 1991. *Thesaurus: A Study of the Treasury Building as Found in Greek Sanctuaries*. New York.

Sanders, D. 1990. "Behavioural Conventions and Archaeology: Methods for the Analysis of Ancient Architecture." In Kent, ed., 43–72.

Schultz, P. and R. von den Hoff, eds. 2009. *Structure, Image, Ornament: Architectural Sculpture in the Greek World*. Oxford.

Scott, M.C. 2007. "Putting Architectural Sculpture into its Archaeological Context: The Case of the Siphnian Treasury at Delphi." *BABesch*, 82 (2): 321–31.

Scott, M.C. 2008. "Constructing Identities in Sacred Inter-state Space: The Case of the Arcadian Monument at Delphi." In Menozzi, Di Marzio, and Fossataro, eds., 431–38.

Scott, M.C. 2010. *Delphi and Olympia: The Spatial Politics of Panhellenism in the Archaic and Classical Periods*. Cambridge.

Scott, M.C. 2014. *Delphi: centre of the ancient world*. Princeton.

Scranton, R. 1960. "Greek Architectural Inscriptions as Documents." *Harvard Library Bulletin*, 14: 159–82.

Scully, V. 1969. *The Earth, the Temple and the Gods: Greek Sacred Architecture*. New York.

Snodgrass, A.M. 1986. "Interaction by Design: The Greek City-State." In Renfrew and Cherry, eds., 47–58.

Spawforth, T. 2006. *The Complete Greek Temples*. London.

Tanner, J. 2006. *The Invention of Art History in Ancient Greece*. Cambridge.

Tarn, W.W. 1924. "The Political Standing of Delos." *JHS*, 44: 141–57.

Tomlinson, R. 1976. *Greek Sanctuaries*. London.

CHAPTER 11

The Periclean Acropolis

Robin F. Rhodes

The Parthenon, the Propylaia, the Erechtheion, the Temple of Athena Nike – the major elements of the Periclean Acropolis, perhaps the most successfully monumental complex of the classical Greek world, if not of Western culture in general – are akin to great arias. Mellifluent in architectural design and execution, they are extraordinarily innovative works that stand on their own as individual accomplishments of great value and influence. Just as important, however, their meaning resides in their role as carefully conceived components of an integrated design for the Acropolis as a whole, a building program that can only be properly understood as a staggeringly creative synthesis of rich architectural, religious, and historical traditions of the past and the immediate cultural context of Athens in the aftermath of the great war with Persia.

The Acropolis, as rebuilt under the leadership of Pericles in the years following 450 BCE, lies in a complex context built upon the traditional architectural and religious attitudes and practices that shaped the pre-Persian Acropolis ([Figure 11.1](#) and [Figure 11.2](#)). The design and decoration of the new temples convey Athenian understanding of their great antiquity and origins, witnessed in the conscious preservation and presentation of various topographical and religious artifacts on the Acropolis. Recent events and their impact, especially the Persian War (499–449 BCE) and its immediate and subsequent effect on the Acropolis, are also remembered and included. Besides this historical consciousness, the buildings convey the Athenians' view of themselves and their status in the rest of the world. The complex on the Acropolis was intended to mark Athens' position at the head of a defensive alliance against the Persians made up of Athens and the Ionian city-states of the Aegean and Asia Minor.



Figure 11.1 Acropolis of Athens, view of north wall, with reused blocks from the Older Parthenon and Temple of Athena Polias.

Source: M.M. Miles.



Figure 11.2 Acropolis, detail of north wall, with reused blocks from the

The Persian War and the Acropolis

When the smoke cleared following the Persian attack of Athens in 480 BCE, the Acropolis had been destroyed. The Temple of Athena Polias, the Temple of Athena Parthenos (still under construction as a celebration of the miraculous Athenian victory over the Persians 10 years earlier in the Battle of Marathon), the Sanctuary of Athena Nike, the gateway, and the treasuries of the Acropolis had been reduced to rubble. The world had suddenly changed. Greece had been on the verge of extinction and the threat remained until a final peace was concluded in 450. An ancient Athenian view of the recent events may have looked like the following account.

In 490 BCE, the king of Persia, Darius, dispatched a massive naval force against Athens in vengeance for their earlier support of a rebellion of Ionian Greeks against their Persian masters. It is difficult to imagine the magnitude of the terror that must have gripped Athens as this great dark force from the edge of the world advanced upon them. Athens, a city-state tiny in comparison to the endless legions of the Persian army, was a nation of citizens who all shared in the decisions and defense of the state, while the Persians conscripted their soldiers from subjugated nations and whipped them into battle against their will and often with scanty armor, overcoming the enemy by the force of sheer numbers. Adding to their horror as the lone focus of attack by an immense and alien empire that stretched to the edges of the known world, the threat to the existence of Athens' newly established democracy was emphasized and personalized by the presence in the fleet of the deposed tyrant of Athens, Hippias, an advisor to Darius and his admirals hopeful of regaining his autocratic power. Yet with the help of Athena, the greatly outnumbered Athenians miraculously defeated the Persians on the plain of Marathon northeast of Athens and, in so doing, profoundly altered their place in the world and their view of themselves. They were suddenly heroic, favored by the gods, and worthy of the admiration of all Greeks.

This change in Athenian self-image and in the position of Athens in the greater Greek world manifested itself immediately on the Acropolis in the initiation of construction of a new temple of Athena Parthenos, the predecessor of the Periclean Parthenon. Unfortunately, the battle at Marathon did not dampen the Persian resolve to destroy Athens, and, 10 years later, in 480 BCE, Xerxes, the son of Darius and his successor as Persian king, led an army and fleet of epic proportion against the Greek mainland. Athens and its Acropolis, including the still unfinished temple of Athena Parthenos, were

ravaged.

Shortly after the sack of the city there occurred a second Athenian miracle, the result of masterful Athenian deception and strategy: the decimation of the Persian fleet in the narrows between Athens and the island of Salamis. A year after that, the vast Persian army, stranded on the mainland without a supplying fleet, was defeated at Plataia by the united Greek land forces, commanded by Sparta. The victory at Plataia, however, did not signal the end of the Persian War. It was prosecuted for another 30 years, mainly in the eastern Mediterranean by the fleet of Athens and her Ionian allies.

Ruins as Monuments: The Acropolis North Wall

Following the Battle of Salamis, the Athenians had returned to the rubble of their city. The buildings of the Acropolis were now in heaps of scorched blocks, and the lower city was devastated. The Athenians almost immediately rebuilt the ruined north fortification wall of the Acropolis using fragments of the buildings destroyed by the Persians (Figure 11.1). These fragments were not haphazardly incorporated into the structure. Instead, they were carefully arranged according to type or in reproduction of the more complex combinations in their original building, clearly legible from the city center below as column drums from the still unfinished Temple of Athena Parthenos (the Older Parthenon) or as the entablature of the Temple of Athena Polias (Figure 11.2). A new kind of historical monument was born, and in the north wall of the Acropolis it became a monument of intentional construction. Even more visible from the city's civic center, the agora, than the temple shells of the Acropolis, the ruined architectural fragments in the north wall were daily reminders of the continuing need for vigilance and vengeance, as well as of the already tremendous investment of Athens in the war against Persia. By 450 BCE the Persian threat was finally gone, and the way was clear for the general Pericles to begin a new building program on the Acropolis.

The Propylaia and the Temple of Athena Polias

Pericles' Acropolis represents the rebuilding of the religious center of Athens after it had lain in ruins for more than 30 years following the Persian sack, and the Persian War was acknowledged and emphasized in its monuments (Figure 11.3). Rather than clearing away the debris and rebuilding on the same site, as was done with the Parthenon and the Propylaia and the Temple of Athena Nike, the decision was made to leave the Temple of Athena Polias in ruins, at

least temporarily, and to reorient the Acropolis gateway to align directly with it. The entrance to the Acropolis was now focused on what had been the most important temple in the city, the home of the most ancient image of Athena, now an evocative monument to the war that had utterly transformed Athens and the Greek world. Directly in front of the temple terrace stood a great statue of Athena Promachos, the warrior goddess, forged from Persian armor and weapons captured at Marathon, the first direct Athenian encounter with the Persians and the beginning of Athens' transformation. The Persian War was literally central to the experience of the new Acropolis (Papadopoulos and Martin-McAuliffe 2012).

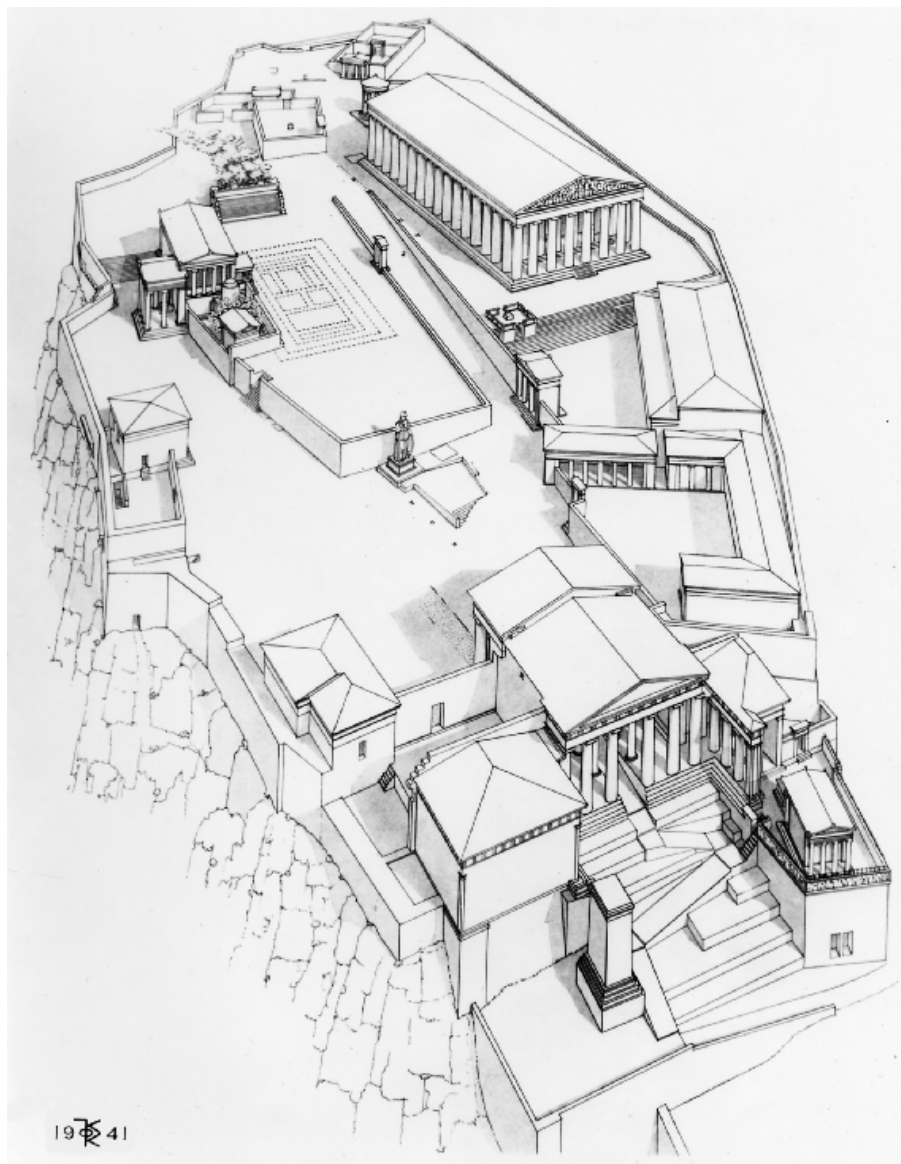


Figure 11.3 Athenian Acropolis, reconstruction. American School of Classical Studies, Archives in the Blegen Library, Gorham P. Stevens.

Source: American School of Classical Studies at Athens.

The ruined Temple of Athena Polias possibly remained on the Acropolis as an active monument even after its successor, called by modern convention the Erechtheion, was constructed just to the north, and the south porch of the Erechtheion was constructed in direct conversation with it (see Gerding 2006). The ruins were extensive, reaching to the height of the roof in places, and they are probably reflected in the Erechtheion's long, blank south wall, built nearly flush with the north colonnade of the Polias temple. It is likely that the temple was similarly preserved towards its west end and that, therefore, the south porch of the Erechtheion (the Caryatid Porch) was visible only through the rubble of the ruined temple, from the Sacred Way, as it passed between the Polias temple and the Parthenon (Figure 11.4). Vitruvius believed that the caryatids, the female figures that formed the columns of the porch, represented the women of a Greek city who had betrayed the allied cause to the Persians and that, as load-bearing elements, were forced to bear the burden of their shame forever (Vitr. *De arch.* 1.5; Vickers 1985). Whether this was something the architects and sculptors of Pericles had specifically in mind, the tradition preserved by Vitruvius certainly concerns the Persian War, and it is likely that these sculpted women were designed to be seen in the physical context of the Persian destruction of the Acropolis. Viewed through the ruins of the Athena Polias temple, they must have provoked numerous associations, perhaps of priestesses and attendants of Athena, almost certainly of the multitudinous sculptures of women (*korai*) that had stood on the Acropolis before the Persian sack. Similarly, in the context of the resurrection of the Acropolis even the most familiar, traditional sculptural themes of the Periclean Parthenon – the birth of Athens in the east pediment, the mythical battles in the metopes between more and less civilized forces (Greeks and gods on the one hand, Amazons, Trojans, centaurs on the other) – must have resonated with the Athenians' memory and view of themselves in the Persian War.

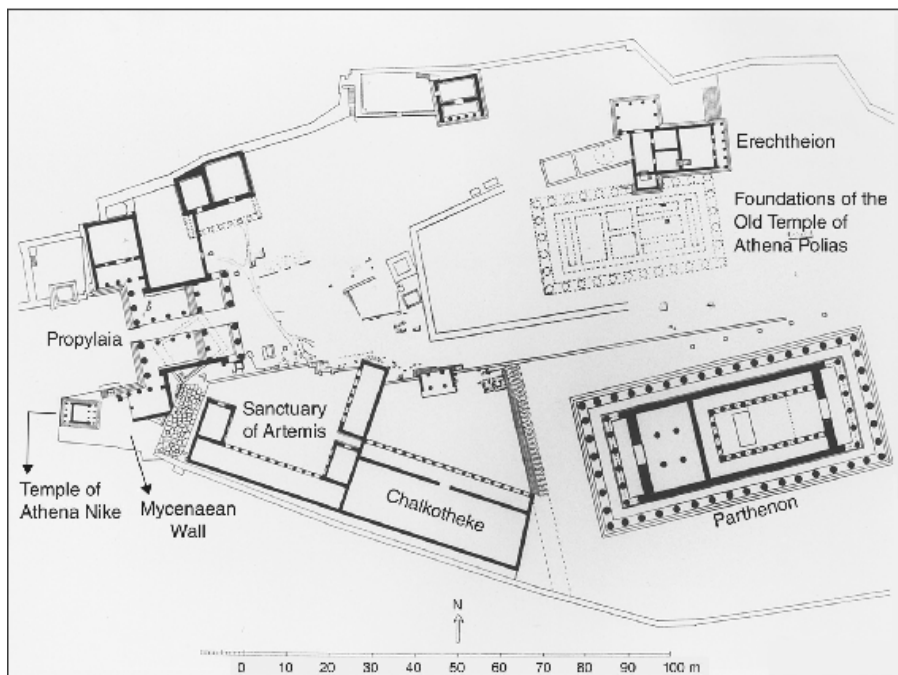


Figure 11.4 Athenian Acropolis, plan. American School of Classical Studies, Archives in the Blegen Library, Gorham P. Stevens.

Source: American School of Classical Studies at Athens.

The web of context in which the Periclean Acropolis needs to be understood includes most immediately the experience and aftermath of the Persian War. It also includes the architectural, religious, and historical traditions of pre-Persian Athens.

The Mycenaean Era and the Periclean Acropolis

In the tradition of so many Dark Age religious foundations that were inspired by the discovery of Mycenaean remains, the religious center of Athens was originally founded on the ruins of a Mycenaean palace high on the Acropolis rock. As late as the Periclean version of the Acropolis, physical contact with and display of the Mycenaean remains was critical to the nature of the sanctuary and its cults. The difference between Athens and early religious foundations in most of the rest of mainland Greece was that the Athenians were building on the architectural remains of Mycenaean ancestors who apparently had not been overcome and displaced by invasion, plague, or drought but who seem to have remained on the same spot continuously from the age of the heroes to the dawn of classical Greece. The Athenians were reminded of this every time they heard the Dorian dialects of their

neighboring mainland city-states, for the Athenians still spoke the ancient Ionian dialect of the Mycenaeans. The Athenians felt so deeply rooted into their native soil that they believed their first king, Kekrops, had slithered out of the earth, snaky tail and all, to found the city.

On the Periclean Acropolis, the great antiquity of the Athenians was preserved and displayed most explicitly in the cults and architecture of the Erechtheion, the successor to the Temple of Athena Polias, the most venerable of the temples on the Acropolis and originally built on the spot of the megaron of the Mycenaean palace. Housed in and immediately around the Erechtheion, in addition to the very ancient cult image of Athena, were many cults and artifacts associated with the mythical foundation of the city, including a cult to the snaky-bodied king, the saltwater spring and olive tree of the contest between Athena and Poseidon for control of the original city, and the marks left by Poseidon's trident in the bedrock when he struck down Erechtheus, another legendary Athenian king. The roots of the people of Athens were so deep and venerable that their ancient history was populated with heroes and gods (Figure 11.5).



Figure 11.5 The Erechtheion, with Caryatid Porch overlapping the foundations of the old Temple of Athena Polias.

Source: M.M. Miles.

The great Periclean gateway to the Acropolis, the Propylaea, and the Sanctuary of Athena Nike also enshrined and displayed the most ancient history of the Acropolis. The design of Mnesikles, the architect of the

Propylaia, not only respected the best preserved and tallest stretch of Mycenaean wall on the Acropolis but it also actually incorporated it – for visual, not structural purposes – into its southeast corner. The new Propylaia acknowledged and celebrated its physical and spiritual connection with the earliest remains and history of the Acropolis through the intentional display of the city's original fortification wall. Less obvious, as it is sheathed in fifth-century ashlar masonry, is the incorporation of another Mycenaean structure, perhaps a defensive bastion, into the Periclean gateway complex. Originally freestanding in front of the Mycenaean wall but now connected with the Propylaia proper by classical masonry, the Mycenaean structure served as the structural base of a pedestal for a monument to victory, the small Temple of Athena Nike. A small window was left in the classical masonry near its base that allowed direct visual and tactile access to the cyclopean stones that formed the original Mycenaean foundation and, now, the classical one. Finally, less overt but equally expressive of Mycenaean palace architecture, the remains of the Mycenaean entranceway seem to have inspired Mnesikles to design the Propylaia according to Mycenaean principles of defensive architecture, with outstretched wings that encompassed and channeled anyone approaching, very much like the Mycenaean gateway to the Acropolis and the Lion Gate at Mycenae.

The Parthenon, too, might carry Mycenaean allusion. As the original temple of Athena Polias was founded on the ruins of the Mycenaean palace, and consistent with the universal fascination of early mainland Greeks with their heroic past, the name “Parthenon” may in fact indicate “the place of the maidens” rather than an epithet for Athena, and the western cella – the only part of the temple actually referred to by the ancients as the “Parthenon” – may reflect and preserve the position of the tomb of the daughters of one of the legendary founding fathers of Athens (Connelly 1996: 76). It was through the agency of their self-sacrifice that Athens was first miraculously delivered from destruction at the hands of an invading enemy, deep in the shadows of mythical history.

The Archaic Tradition of Procession

The Acropolis was first monumentalized in the sixth century BCE in conjunction with the reorganization of the Greater Panathenaia, the birthday celebration of Athena. It was designed as the monumental context for the festival's culminating ceremony, the Panathenaic Procession, whose participants went from the Dipylon Gate of the city wall, through the city, up to the Acropolis, through its gateway on the west side and east across the Acropolis to the altar of Athena just east of the temples. There, in front of the temples, the final sacrifices took place and the climactic presentation to

Athena of her new dress (*peplos*). The procession was one of the organizing principles of the architecture on the Acropolis. Throughout the Archaic period building types and architectural sculpture of the Acropolis were organized in a west-to-east hierarchy, from non-temple forms and purely narrative pedimental compositions, to the backs of temples with mixed narrative and emblem in their pediments, to the temple fronts that carried purely emblematic sculpture. Procession was at the core of the meaning and function of the Archaic Acropolis, and it continued to be a guiding principle in the design and practice of its Periclean successor.

By its very nature, the Propylaia is the most overtly processional structure on the Periclean Acropolis, as its purpose was to receive the Panathenaic Procession onto the Acropolis and to prepare its participants for what was to come. The building marks the point of transition between the slope of the Acropolis and its open, flatter top surface, and metaphorically stands at the boundary between secular and holy. The architectural language of stacked pediments speaks clearly of movement from low ground to high and creates an architectural metaphor for spiritual transition. Even more specifically processional is the essentially Ionic spirit of this ostensibly Doric building. As the graduated spacings in the front colonnades of the colossal temples of Ionia lead directly to the axis of the temple, so the spacings of the Propylaia's Doric colonnade widen from ends to center, and the corresponding doorways within widen and increase in height. The Ionic inspiration for this processional language is made explicit in the Ionic columns of the interior, which, like the pronaos columns of colossal Ionic temples, continue and repeat that central spacing again and again in pairs of columns that lead from the front colonnade to the stairway and wall that separate the west and east porches of the Propylaia and mark the final boundary between the world outside the Acropolis and the sanctuary of Athena within. This boundary coincides with the top step of the interior stairway, and it is directly above that the second pediment rises.

Through its processional language, the Propylaia provided an architectural preparation, a formal approach for passage onto the Acropolis. Even before the building was entered, the processional approach was architecturally formalized in the outstretched wings of the Propylaia and Nike bastion, which enveloped the procession in its final climb to the top of the ramp. The preparation for passage onto the Acropolis began long before the procession reached the Propylaia/Nike entrance complex. From far away the stacked pediments spoke of physical and spiritual transition. The Ionic form of the little Temple of Athena Nike, whose rear colonnade stood at the edge of the bastion and was clearly visible only from outside the Acropolis, intentionally projected to the city an architectural tradition rooted in procession. And, from far away, deep shadows cast by the flying drapery carved on the parapet of the bastion articulated a sculptural procession of like figures and identified them

as Nikai. Long before the entranceway was reached the twin messages of procession and victory had been iterated.

The general processional hierarchy of building type and sculpture on the Archaic Acropolis was continued in the building program of Pericles. While the temples remained to the east, the west side continued as the zone of less sacred theme and building type, as the immediate experience of the forecourt between the Propylaia and the temples was dedicated to the memorialization of the Athenian experience of the Persian War, and the Sanctuary of Artemis Brauronia and the Chalkotheke were non-temple in their form and function. Similarly, the west-to-east hierarchy of architectural sculpture continued on the Periclean Acropolis, with the most specifically human themes (historical battles of the Greeks) carried by the westernmost building of the Acropolis, the Nike temple, and the sculpture of the eastern temples dedicated more exclusively to mythical and divine themes. Similarly, in the Nike temple and the Parthenon, the east end was distinguished from the other sides by the predominant representation of divinity rather than history or heroes.

Mnesikles' Propylaia embodies the reinvention of Athenian architecture as a mixture of Doric and Ionic, a style completely appropriate to the processional requirements of the Acropolis ([Figure 11.6](#)). The function of preparation inherent in formal procession, religious or architectural, is also apparent in the Propylaia's foreshadowing of similar combinations of Doric and Ionic elsewhere on the Acropolis, particularly in the Parthenon. Topographically, the Propylaia foreshadows the Parthenon, but the Parthenon was built first and Iktinos and Kallikrates, its architects, anticipated Mnesikles' synthesis of the two architectural orders. Iktinos specialized in Doric and Kallikrates in Ionic, and, like the Propylaia, the Parthenon is Doric in elevation but Ionic in spirit. Like the colossal temples of Ionia, eight columns (rather than the normal Doric six) constitute the front and back colonnades of the Parthenon's peristyle, while prostyle porches of six columns each (instead of the normal distyle in antis of Doric) effectively impart the impression of the double colonnades of the Ionic colossi ([Figure 11.7](#)). And while the column spacings at the front of the Parthenon are not graduated from corner to axis like Ionic or like the Propylaia, the spacing between the two columns at each end of the façade is much narrower than the rest (significantly narrower than standard Doric angle contraction), creating an impression of intercolumnar expansion towards the center. That this specific Ionic processional technique was also intentional is revealed in the complementary character of the façade metopes, which gradually expand from the corners to the axis of the building.



Figure 11.6 The Propylaia, east façade.

Source: M.M. Miles.



Figure 11.7 The Parthenon, east front.

Source: M.M. Miles.

More literally Ionic and more literally processional is the sculpted frieze supported by the prostyle colonnades at each end of the cella and by the upper reaches of the cella flank walls. Its sculptural ground is not punctuated and divided by triglyphs but, like the friezes of Ionic temples, is continuous. As with the friezes of Ionia, it carries the sculpted representation of a procession, and, like the Panathenaic procession on the Sacred Way below, it moves from the west end of the temple, up the flanks, to the east end where, again like the Panathenaic procession, it comes to a halt and rituals are performed in the presence of divinity. The culminating act of the ceremony is represented at the center of the east frieze, on the axis of the temple entrance.

The traditional architectural procession of Ionic temples leads not only to the front and to the axis of the temple but also, like the Ionic columns of the Propylaia, deep into the interior of the building. There the sculptor Pheidias built his immense gold and ivory image of Athena Parthenos; and there Iktinos and Kallikrates constructed a monumental architectural frame for it, an impressive three-sided double-tiered colonnade whose flanking wings also supported the roof, but whose rear columns existed purely for the purpose of creating a monumental backdrop for the most impressive cult image yet created in the Greek world. As in the colossal temples of Ionia, the architecture of the Parthenon and its sculptural friezes led to the front of the temple, then to its axis, and finally to the pronaos and cella whose ornate composition and materials beckoned from within.

The cult image of Athena Parthenos was not the culmination of the Panathenaic procession, but it was the culmination of the architectural procession of the Acropolis, and it reflects an Ionic concern with interiors. In fact, Iktinos' most significant alteration in the plan of the earlier Parthenon, the one destroyed by the Persians and on whose foundations the Periclean Parthenon was constructed, is the increase in the width of the cella. The most basic and important function of the cella of a Greek temple was the housing and display of its cult image, and the increased width of the Periclean cella suggests that more room was required for its cult image. The implication is simple but profound: the interior of the cella was not only emphasized and accessible, but it was perhaps the most fundamental consideration in the design of the new Parthenon.

The architectural procession of the Acropolis led from outside the Propylaia/Nike complex, through the Propylaia and Acropolis forecourt, along the Sacred Way between the Parthenon and the ruined Temple of Athena Polias, to the axis of the Parthenon's east end, and finally into its cella. Religious procession prepares worshipers for a final approach to divinity, and the preparation of the Propylaia and Nike temple included the foreshadowing of the continuing themes within the Acropolis walls of Doric/Ionic synthesis and of architectural procession. They also almost literally foreshadowed the culmination of the architectural procession by means of a formal visual

rhyme. As the Propylaia extended to the city of Athens the architectural embodiment of victory, the tiny temple of Athena Nike balanced on the outstretched arm of the bastion, so the cult image of Athena Parthenos, in the cella of her great temple, offered on her hand Victory in its sculpted form.

The individual buildings and the overall organization of the Periclean Acropolis revived and continued the traditional processional spirit of the Archaic Acropolis, but, at the same time, the accessibility of the interior and the decorative elaboration of its cella were significant departures from Doric tradition and from the traditional mainland conception of the relationship between humans and temple divinity. Already in the pedimental sculpture and other monumental art of the Archaic and early Classical periods, a shrinking distinction between human and divine was indicated, a gradual humanization of the conception of divinity, and a reciprocal divinization of humanity; however, the Athenians' unlikely success against the Persians, from Marathon to Salamis to the eastern Mediterranean, seems to have precipitated an even more dramatic closing of the gap.

The paradoxical relationship of humans and human history to divinity on the Acropolis is apparent in the way in which the Athenians represented themselves in the sculpture of the Parthenon. Rarely if ever had a purely human procession, like the procession on the Parthenon's Ionic frieze (probably a procession of Athenians from the city's heroic/historic past), appeared on a Greek temple, and on the Parthenon frieze they are depicted side by side, even if not in equal scale with the Olympian gods themselves. Even the pedimental sculpture of the Parthenon's west end illustrates not a universal Greek myth but a moment in the history of the Athenians (mythical history, to be sure) and includes Kekrops, first king of Athens and judge of the contest of Athena and Poseidon. This new relationship between Athenians and divinity also played a role in the overall processional nature of the Acropolis, for the sculptural program, as a whole, seems to have taken a giant step towards the human side of the human/divine equation. Even more dramatically radical, in the context of the westernmost building on the Acropolis, the one located closest to and directly addressing the secular world outside the limits of the sanctuary, the Temple of Athena Nike carried sculptures more human in conception than any other architectural sculpture on the Acropolis itself. For the first time in Greek temple architecture, scenes of contemporary historical events, battles still fresh in the minds of the Athenians, were represented on the Nike temple frieze.

Non-Processional Uses of the Ionic Order

The integration of Ionic form and spirit into the traditionally Doric fabric of Athenian architecture was expressive of the traditional processional nature of

the religion and architecture of the Acropolis; it was appropriate in the context of the victorious conclusion to the destructive Persian War and the reconstruction made possible (militarily and economically) by an alliance of Ionian states headed by Athens. The Propylaea/Nike complex and the Parthenon signaled the advent of a new international style of architecture, a fusion of Doric and Ionic as reflective of Athens' contemporary history and political and military ties with Ionia as it was of the religious and architectural traditions of the Acropolis. It was also expressive of the great antiquity of the Athenians, as indicated by the ancient Ionian dialect they still spoke and the Mycenaean remains still preserved on the Acropolis. The Ionic of the Erechtheion is most directly emblematic of these deeply ancient associations. It was the Erechtheion that housed the most ancient cults on the Acropolis, the cults surrounding the most ancient, mythical history of the city's birth and the adoption of the city by the goddess Athena.

The Erechtheion, not the Parthenon, and its predecessor, the Temple of Athena Polias were the temples most critical to the celebration of the Panathenaia. Successively they housed the ancient wooden image of Athena, on which was draped the new birthday peplos. It was in front of these temples at the great altar of Athena that the Panathenaic Procession participants assembled for the final festival sacrifices and the final presentation of the peplos. The basic role of the Erechtheion, as it faced the altar of Athena and the procession, is clear and traditional, but architecturally and religiously it is the most complicated, least canonical building of the entire Periclean Acropolis. Within the Erechtheion and immediately outside it were housed a host of cults (to Athena, Poseidon, Erechtheus, Boötes, and others) and artifacts (triton or thunderbolt marks, saltwater reservoir, olive tree) relating to the very earliest history and religious practice on the Acropolis. The intricate and unprecedented plan and elevation of the building express this complexity of function.

Rather than the traditional rectangular plan of Doric and Ionic temples, with a cella building and surrounding colonnade, or with a cella building and a columnar front and back porch, the two main columnar porches, the two main entrances of the Erechtheion, are on adjacent sides of the temple, the east and the north. And rather than the traditional interior configuration of a single main room (the cella proper) that held the cult image, the interior rectangle of the Erechtheion, as of its predecessor, is divided into four distinct rooms. The overall religious and architectural organization of the temple, however, breaks down more simply. The two major types are the cult of Athena, associated with the Greater Panathenaia, and the complex tapestry of cults associated with the foundation of the city and its most ancient history. Those two types are also distinguished by their more generally Olympian and chthonic natures, respectively. Although everywhere on the Acropolis Olympian Athena includes a certain admixture of chthonic character, the foundation myths of

the Athenians are inherently chthonic, as they reside in the Athenians' conviction of their presence on the same site from the greatest antiquity, so great that they were an autochthonous people (Shapiro 1999).

When Pausanias calls the Erechtheion a "double building" (Paus. 1.26.5), he could just as easily be describing its architecture as its religious function. The east porch of the Erechtheion was without doubt conceived in conjunction with the Grand Panathenaia and its culminating procession and sacrifices. It faced the end of the Sacred Way and the altar of Athena and hosted the climax of the entire religious festival, the presentation of the peplos. But the east porch was completely invisible to the procession as it passed through the Propylaia and bore to the right along the Sacred Way. In fact, what was visible of the Erechtheion from the entranceway to the Acropolis was the upper story of its west end (the basement façade was obscured by the terrace of the old Temple of Athena Polias) and its north porch, and perhaps a glimpse of the Caryatid Porch, though that might have been obscured by the ruins of the Athena Polias temple (Ferrari 2002; see also: Pakkanen 2006; Linders 2007 for evidence refuting this view). The only main entrance visible from the Propylaia was the north porch. Although the north porch faces north, its primary approach is from the west. Its impressive scale and remarkable decorative elaboration were made emphatic to those viewing it from the Propylaia by its doubled intercolumnar depth and the consequent presentation of two flank columns to those approaching from the west. The north porch was the largest and most monumental of the Erechtheion porches, obviously intended to impress and attract, and its primary approach involved abandoning the Sacred Way. Clearly it was conceived in relation to something other than the Panathenaic Procession.

The arrangement of the two main porches of the Erechtheion is consistent with Pausanias' double building. The main east–west block of the temple was oriented towards the Sacred Way and the Panathenaic Procession and was approached through the east porch. The north porch, on the other hand, had no direct relationship with the Sacred Way and led directly into a north–south cella, whose width and alignment coincided with the south porch of the Erechtheion, the Caryatid Porch. In plan, the north porch, the Caryatid Porch, and the long west cella of the Erechtheion were conceived as a north–south unit at right angles to the main east–west block.

The exterior impression of the Erechtheion presents a more complicated image, but is still dual. The roof was a unified structure for the full east–west length of the cella building, with pediments at both ends. Below the roof, the impression of the main east–west block as a monolithic unit is underscored by a continuous Ionic frieze and epistyle that unify the rectangle on all four sides at the level of the entablature. From the vantage point of the Propylaia, where the basement story of the Erechtheion was blocked from view by the terrace of the old temple of Athena Polias, the upper story of the west façade would

have read very clearly as the back porch of the main block, its four Ionic columns between Ionic antae (which balance and reflect the hexastyle façade of the east front) appearing to spring from ground level rather than being suspended high above the ground in a wildly uncanonical two-story façade. From the Propylaia, a view of the back porch of the Erechtheion and the roof of the main block pointed the procession forward to the altar and the final, dramatic rituals of the festival.

The design of the Erechtheion as a traditional east–west temple, and the successor to the old Temple of Athena Polias, was manifest in the view it presented to the procession as people passed onto the Acropolis from the Propylaia, but no attempt was made to disguise its double nature. In fact, its oppositely oriented north porch, whose visibility diminished with every step along the Sacred Way, massive and ornate, taller and more decoratively elaborate than the eastern front porch, spoke in unambiguous terms of a second, equally important function for the Erechtheion, one that had little to do with the Panathenaia or the Sacred Way. The formal qualities of the north porch, particularly its orientation and approach, and the complex aggregation of cult and artifact housed in it and in the associated west cella indicate that it was conceived in relation to something altogether different. Its cults and artifacts and the subterranean suggestion of its north–south cella invoke the most ancient history of the Athenians, a history rooted in the earth, in chthonic origins and practices and ancestor worship. Like the Parthenon and the Nike sanctuary, the Erechtheion was a synthesis of history and myth and religion, of chthonic and Olympian nature, but the Erechtheion celebrated that duality in the openly dual nature of its architecture.

Just as Mnesikles and Iktinos and Kallikrates were deeply versed in the principles and nature of native Ionic architecture, so the architect of the Erechtheion clearly knew the Archaic temple architecture of Greek Sicily. Like the Doric and Ionic, the character of Sicilian temple architecture originated and evolved in response to its own peculiar cult requirements. In response to the requirements of privacy and removal inherent in the overwhelmingly chthonic cults of that region, the peristyle intercolumniations were gradually closed in the evolution of archaic Sicilian architecture, walled up. The partially screened intercolumniations of the Erechtheion west end specifically recall the similarly treated peristyle of Temple FS at Selinous and were surely intended to evoke the chthonic nature of the west-end cults of the Erechtheion.

The Parthenon was the culmination of the formal architectural procession of the Periclean Acropolis, as expressed in the synthesis of traditional forms and themes of Doric and Ionic architecture and architectural sculpture. The Erechtheion, on the other hand, across the Sacred Way, was in many ways the culminating synthesis of the Acropolis as a religious and conceptual whole, including the sometimes paradoxical if not contradictory concerns of chthonic

cult and Olympian, sanctuary and city, hero and god, religion and history, history and myth, mythical history and contemporary, foundation and destruction.

Ionic as Direct Address to the City

As soon as the Sacred Way emerged from the east porch of the Propylaia, the approach to the north porch of the Erechtheion diverged to the left. It is the side of the porch, not the façade, that presents itself to the Propylaia. The side is not the normal primary view of a temple porch, but the substantial volume presented to the west by the double intercolumnar depth of the north porch and by the two prostyle columns of its west flank draw attention to the porch as a planned approach to the building. This is the main view of the Erechtheion north porch from within the Acropolis walls: an ideal viewing spot for the north porch is nowhere available on the Acropolis, since there is insufficient space in front of the north porch from which the façade can be taken in as a whole, in one view. This could simply have been the consequence of limited space to the north of the old Temple of Athena Polias, but the fact is that north porch rises high above the Acropolis north wall and addresses the city beyond the Acropolis. The other building on the Periclean Acropolis whose design specifically addresses the city is the only other overtly Ionic building on the Acropolis, the Temple of Athena Nike. In the Nike temple, the choice of Ionic was appropriate not only for its processional associations but also for Athens' historical connections with the Ionians, both ancient and contemporary, particularly contemporary, as victory in the context of the Periclean Acropolis was directly tied to the Athenian alliance with Ionia against Persia. Like the Nike temple, though in reversed proportion of ancient and contemporary, the Erechtheion north porch spoke to the city of its history, here more of illustrious ancestors, ancient Ionian dialects, and autochthonous kings than of contemporary alliances.

The Ionic order was employed in the Erechtheion and in the Nike temple at least in part for the purpose of projecting from the sanctuary of Athena directly to the citizens of Athens a sense of the heroic importance of Athenian history. This direct interaction between the sanctuary of Athena, Athenian history, and the Athenians in the city below further diminished the conceptual distance between human and divine by elevating contemporary accomplishments to the realm of myth and mythical ones to the realm of religion.

The Monumental Effect of the Periclean Acropolis

From the beginning, Greek monumental architecture was an architecture of boundary. It was created at points of profound transition, at boundaries between realms of the everyday and the extraordinary. Its purpose was to acknowledge these boundaries and, more important, to provide appropriate preparation for approach to them, to put anyone approaching in an appropriate state of mind for confronting or contemplating or communicating with whatever lay beyond. Invariably, this transformation of attitude was accomplished by confronting those approaching with an object that had itself been dramatically transformed from the familiar, from the everyday to the extraordinary. The transformation of the object could be accomplished through transformation of scale, materials, composition, theme, intricacy, and organization, and apparent effort. The drama implicit in the contrast between the familiar version and the new, between the expected and the experienced inspired a sense of the extraordinary, of approaching something beyond the mundane experience of everyday routine, something profound, something that required the mediation of a truly extraordinary object. As a religious procession represents the transformation of an everyday activity into formal, ritualized approach, so the experience of monumental temples helped prepare worshippers, helped transform and elevate their attitude appropriately for an encounter with divinity.

The drama of transformation in the earliest examples of monumental Greek architecture is clear and simple. In the earliest monuments post-Dark Age Greece, the transformation of common kitchen vessels into gigantic, painted versions was appropriately shocking, appropriately extraordinary for a conditioning approach to graves, to the boundary between life and death, the most profound transformation in the life of a human being. The temple's similar transformation from ordinary, ephemeral materials, simple surface, and unremarkable scale into a huge, intricately carved, permanent stone structure must have been equally powerful in its effect. By the time of the Periclean building program on the Acropolis, however, Doric temples had been created in much the same way for a very long time, and the original drama of transformation was less immediate, the contrast between expected and experienced much less radical: expectation had changed from a small-scale rubble and mudbrick structure built in the local vernacular tradition to the now long familiar stone Doric temple. The extraordinary imagination and ambition of Pericles' architects, however, in the setting of the profound shift of Athens' psyche and position in the world that resulted from the long war with Persia, spawned architectural transformations as disorienting and as monumental in their denial of expectations as the transformations inherent in the original monumental architecture of Greece.

Doric was the architectural liturgy of mainland Greece, and the radical break from its traditional rules that occurred on the Periclean Acropolis, the internationalization of the architectural expression of the traditional cults of

Athens and the insertion of the Athenians themselves into the temple architecture of their religious center, could have been possible only in the context of an Athens whose almost miraculous accomplishments in the war against Persia had elevated her in her own eyes and in the eyes of many of the Greeks to an almost mythical status, an Athens that now stood at the head of a new international empire, an Ionic empire centered on the Doric mainland.

One of the most basic, traditional goals of monumental Greek architecture was the transformation of attitude through the agency of its own radical transformation. The Propylaia was emphatically transformed from a traditional Greek gateway through its unprecedented scale, stacked pediments, and enveloping forecourt. The heroic, Mycenaean reference of the forecourt plan and the visual access to the foundation blocks of the old Mycenaean bastion further lifted the Propylaia into the realm of the extraordinary. So did its hexastyle façade, which, even from a great distance, spoke the language of a Doric temple rather than that of the long tradition of more modest in antis gateways. The primary purpose of Greek monumental architecture was to condition approach to an important boundary, and the Propylaia was excellent preparation for the multifaceted experience that lay beyond the border between secular Athens and the sanctuary of Athena within the Acropolis walls. Unlike any gateway before and absolutely appropriately for the unprecedented architecture that lay beyond, the fusing in the Propylaia/Nike complex of Doric and Ionic form, spirit, and allusion introduced the themes of victory, procession, contemporary history, and the heroic origins of Athens that dominated the meaning and experience of the Acropolis within (see Papadopoulos and Martin-McAuliffe 2012). Immediately beyond the Propylaia lay another surprise.

The Athenians' most dramatic experience of wrenching change had occurred when the Persians leveled and torched the Acropolis, and they recognized in it the unique opportunity for an unprecedented experience of monumentality. The emotional mechanism of ruined temples preserved as conscious monuments was absolutely consistent with the transformational effect of other monumental architecture through its inherent comparison between the everyday and the extraordinary. Here the extraordinary was tragic and created in the Athenians an attitude appropriate to the continued prosecution of the war against Persia, as well as to the development of their own self-image as heroic. So effective was this inadvertent discovery and so emblematic of the new character of Athens that the Athenians intentionally placed it at the center of their grand Periclean rebuilding. Rather than the sparkling new Parthenon, emblem of the new wealth and power and position of Athens, it was the ruined temple of Athena Polias on which the Periclean gateway now focused and that dominated the immediate experience of passage from the Propylaia onto the new Acropolis. The Parthenon is the largest and in many ways the most impressive building on the Periclean Acropolis, and it stands on the

highest point of the sanctuary. Its fusion and synthesis of Ionic and Doric, of Ionia and Athens, defined the Parthenon, as it did the Propylaia, as something altogether new and, simultaneously, as a product of local tradition. Its Doric columns and entablature barely distracted from the transformation of the traditional hexastyle façades of Doric into Ionic-inspired octastyle dipteral porches which, in concert with the processional language of the sculptural program, led like the temples of Ionia to the front, to the axis, and then into the cella. The great monumental drama of the Parthenon lay not only in its tremendous size – greater than any temple that had ever been completed on the mainland, including the Temple of Zeus at Olympia, and greater than all but a very few Athenians had ever seen – but also in the new international language it spoke. In addition, it was the most elaborately sculpted temple in the Greek world, with all 96 metopes carved, as well as the Ionic frieze and both pediments. Everything about the Parthenon must have seemed new and extravagant and hugely impressive in comparison to any temple the Athenians had ever before known.

The overwhelmingly detailed surface decoration of the Parthenon contrasted with all temples that had come before and, consequently, contributed to its monumentality through the traditional contrast between expected and experienced. Equally remarkable was the introduction of barely visible distortions to all horizontal and vertical lines and planes in the temple: all horizontals were now transformed into barely perceptible convex curves, all verticals tilted slightly out of plumb. Nearly a century earlier convex curvature had been introduced to the Greek temple stylobate and to the peristyle floor for the simple utilitarian purpose of drainage, but like many other practical aspects of temple building (such as reference in the entablature of the stone Doric order to traditional vernacular construction technique in wood and mud brick), curvature was ultimately transformed from the purely utilitarian into something worthy of aesthetic exploration. In the context of a deepening Greek interest in the physics of sight and human perception, these curves came to be appreciated and explored in terms of their visual effect. Whether they actually counteracted optical illusions inherent in large scale, unbroken lines (the most common interpretation of their purpose), they did extend the monumental experience to the subconscious: though barely visible, if consciously perceptible at all, the subtle curves and tilts in the Parthenon registered on the retina and somewhere in the brain and thus, on an essentially subconscious level, denied the most basic expectation of post and lintel architecture, that is, clean verticals and horizontals. The subtle tension established in the Parthenon by these unexpected and counterintuitive departures from structural norm may well be paralleled in the monumental impact of the contemporary Doryphoros sculpture of Polykleitos, which seems to have relied in part on the final blurring of the meticulously regular proportions that had formed the beginning principle for the design of the sculpture.

The Parthenon was the architectural climax of the Periclean Acropolis and the culmination of its architectural procession, but it was not experienced in a vacuum. It was the juxtaposition of the Athena Polias ruin on the left of the Sacred Way and the Parthenon on the right that dominated the culminating experience of the Panathenaic Procession as it approached the altar of Athena, and that emphasized the astounding transformation of the Acropolis and of Athens, from near extinction at the hands of the Persians to bright emblem and powerful center of the Greek world, now finally free from the Persian nightmare. Here the comparison between what Athens had been for 30 years and what it had now become was explicit in the jarring contrast between left and right, old and new, broken and whole, defeated and victorious. The Parthenon today is still a marvelously impressive building, and its unprecedented size, and surface decoration, and optical refinements, and dipteral porches, and Ionic processional language, and human reference, and elaborate interior, and colossal cult image would all have defied contemporary expectation and would on their own have created for the Athenians a truly unprecedented monumental experience. Still, the scale and the sculpture and the bright marble of the new Parthenon were surely all the more magnificent and emotionally charged in the reflection of the charred ruins of Athena Polias. We can only try to imagine today how much more powerful the monumental impact of the Parthenon – and, for that matter, of the Propylaea and the Nike Temple and the Erechtheion – would have been when complete, in full color, and in their original context as an integrated whole.

FURTHER READING

For the Acropolis and Athens, Andronikos 1999; Brouskari 1997; Camp 2001; sections in Dinsmoor 1950 and Hopper 1971. More specifically directed to the west end of the Acropolis is Stevens 1940. A classic contextualization of fifth-century Athens is Pollitt 1972. Rhodes 1995 provides an architectural interpretation of the Acropolis. The most detailed and comprehensive presentation of the Acropolis and the history of its scholarship is Hurwitt 1999. Publications focusing on specific buildings of the Acropolis are provided by Penrose (1888), Paton (1927), Bundgaard (1957, which also gives an introduction to problems of Greek architectural design), Bruno (1974), Mark (1993), Dinsmoor and Dinsmoor (2004), and Gerding (2006). And various contexts for understanding the Periclean building program on the Acropolis are established by Herington's classic examination of religion on the Acropolis (1955), by the essays in Neils 1992, 1996 and 2005, and by Keesling 2003. Connelly 1996 and 2014 and Ferrari 2002 contribute to the overall interpretation of the Periclean Acropolis. The prehistoric history of the

Acropolis is treated in Iakovidis 1993 and in Mountjoy 1995. Korres 1995 offers a well-illustrated description of the construction of the Parthenon, and Korres 1994a and 1994b a full synopsis of its architecture. Aspects of the later history of the Acropolis and modern interventions are found in Kavvadias and Kawerau 1906, Economakis 1994, Tournikiotis 1994, Maurommatēs 2003, Neils 2005, and [Chapter 35](#) of this *Companion*, by Lambrinou. Finally, for essays on memory and the Acropolis, especially after the Persian destruction, see Davis 2008 and Miles 2011 and 2014.

REFERENCES

- Andronikos, M. 1999. *The Acropolis*. Athens.
- Boedeker, D. and K. Raafaub, eds. 1999. *Democracy, Imperialism and the Arts in Fifth Century Athens*. Cambridge, Ma.
- Brouskari, M. 1997. *The Monuments of the Acropolis*. Athens.
- Bruno, V.J., ed. 1974. *The Parthenon*. New York.
- Bundgaard, J.A. 1957. *Mnesikles: A Greek Architect at Work*. Copenhagen.
- Camp, J.M. 2001. *The Archaeology of Athens*. New Haven.
- Connelly, J.B. 1996. "Parthenon and Parthenoi: A Mythological Interpretation of the Parthenon Frieze." *AJA*, 100: 53–80.
- Connelly, J.B. 2014. *The Parthenon Enigma*. New York.
- Davis, J.L. 2008. "Memory Groups and the State: Erasing the Past and Inscribing the Present in the Landscapes of the Mediterranean and Near East." In Yoffee, ed., 227–56.
- Dinsmoor, W.B. 1950. *The Architecture of Ancient Greece: An Account of its Historical Development*. 3rd ed. New York.
- Dinsmoor, W.B. and W.B. Dinsmoor Jr. 2004. *The Propylaia to the Athenian Akropolis. Volume II: The Classical Building*. Princeton.
- Economakis, R. 1994. *Acropolis Restoration: The CCAM Interventions*. London.
- Ferrari, G.P. 2002. "The Ancient Temple on the Acropolis at Athens." *AJA*, 106: 11–35.
- Gerding, H. 2006. "The Erechtheion and the Panathenaic Procession." *AJA*, 110: 389–401.

Herington, C.J. 1955. *Athena Parthenos and Athena Polias: A Study in the Religion of Periclean Athens*. Manchester.

Hopper, R. 1971. *The Acropolis*. London.

Hurwitt, J.M. 1999. *The Athenian Acropolis: History, Mythology, and Archaeology from the Neolithic Era to the Present*. Cambridge.

Iakovidis, S. 1993. *Late Helladic Citadels on Mainland Greece*. Leiden.

Kavvadias, P. and G. Kawerau. 1906. *Die Ausgrabung der Akropolis vom Jahre 1885 bis zum Jahre 1890*. Athens.

Keesling, C. 2003. *The Votive Statues of the Athenian Acropolis*. Cambridge.

Korres, M. 1994a. "The Architecture of the Parthenon." In Tournikiotis, ed., 54–97.

Korres, M. 1994b. "The Parthenon from Antiquity to the 19th Century." In Tournikiotis, ed., 136–161.

Korres, M. 1995. *From Pentelicon to Parthenon*. Athens.

Linders, T. 2007. "The Location of the Opisthodomos: Evidence from the Athena Parthenos Inventories." *AJA*, 111: 777–782.

Mark, I.S. 1993. *The Sanctuary of Athena Nike in Athens: Architectural Stages and Chronology*. *Hesperia* Suppl. 26, Princeton.

Maurommatēs, S. 2003. *Photographs of the Athenian Acropolis: The Restoration Project*. Athens.

Miles, M.M. 2011. "The Lapis Primus and the Older Parthenon." *Hesperia*, 80: 657–675.

Miles, M.M. 2014. "Burnt Temples in the Landscape of the Past." In Pieper and Ker, eds., 111–45.

Mountjoy, P.A. 1995. *Mycenaean Athens*. Jonsered.

Neils, J., ed. 1992. *Goddess and Polis: The Panathenaic Festival in Ancient Athens*. Princeton.

Neils, J., ed. 1996. *Worshipping Athena: Panathenaia and Parthenon*. Madison.

Neils, J. 2005. *The Parthenon from Antiquity to the Present*. New York.

- Pakkanen, J. 2006. "The Erechtheion Construction Work Inventory (*IG* I³ 474) and the Dörpfeld Temple." *AJA*, 110: 275–281.
- Papadopoulos, J. and S. Martin-McAuliffe. 2012. "Framing Victory: Salamis, the Athenian Acropolis, and the Agora." *JSAH*, 71: 332–361.
- Paton, J.M., ed. 1927. *The Erechtheum, Measured, Drawn, and Restored*. Cambridge MA.
- Penrose, F.C. 1888, *Investigation of the Principles of Athenian Architecture*. Washington, DC.
- Pieper, C. and J. Ker, eds. 2014. *Valuing the Past in the Greco-Roman World*. Leiden.
- Pollitt, J.J. 1972. *Art and Experience in Classical Greece*. Cambridge.
- Rhodes, R.F. 1995. *Architecture and Meaning of the Acropolis of Athens*. Cambridge.
- Shapiro, H.A. 1999. "Autochthony and the Visual Arts in Classical Athens." In Boedeker and Raafaub, eds., 127–151.
- Stevens, G.P. 1940. *The Periclean Entrance Court of the Acropolis of Athens*. Cambridge, MA.
- Tournikiotis, P., ed. 1994. *The Parthenon and Its Impact in Modern Times*. Athens.
- Vickers, M. 1985. "Persepolis, Vitruvius and the Erechtheum Caryatids: The Iconography of Medism and Servitude." *RA*, 3–28.
- Yoffee, N. 2008. *Negotiating the Past in the Past: Identity, Memory, and Landscape in Archaeological Research*. Tucson.

CHAPTER 12

Color and Carving: Architectural Decoration in Mainland Greece

Jenifer Neils

Although our contemporary buildings mostly eschew ornament, until the twentieth-century decorative embellishments played a key role in the overall design and visual impact of built structures. From the brightly colored cone mosaic columns of the temples atop Mesopotamian ziggurats (circa 3000 BCE) to the polychromed façades of the Sagrada Familia church by Antoni Gaudi in Barcelona (1882 CE to the present), figurative sculpture and applied color have been an integral part of most major construction. Builders in ancient Greece established and developed this practice, which they termed *kosmos*, and although today much of the color has been lost, there is still abundant evidence for carved and painted decoration on columns and capitals, walls and porches, ceilings and coffers, pediments and roofs, and gutters and waterspouts of temples and civic buildings as well as gates (e.g., Thasos, see Walsh 2009), altars (e.g., Tegea, Epidauros, Priene, Pergamon, see Yavis 1949), and funerary monuments (see [Chapter 26](#)).

The most lavishly decorated structures were temples and treasuries, but civic buildings also had sculpted and painted ornament. Examples include stoas, such as the Stoa Basileus and Stoa of Zeus in the Athenian Agora with their terracotta or marble akroteria (roof ornaments), and fountain houses, if their depictions on vases are to be taken literally. Sculpted decoration could be carved in the round (pediments and acroteria) or in varying degrees of relief (friezes, metopes, and moldings), and could be made in a variety of materials (stone, terracotta, bronze, wood, and even ivory). Most of this architectural sculpture was originally painted or gilded, and often had gleaming metal attachments. Colored glass was inserted into the carved guilloche of the Ionic column capitals on the Erechtheion in Athens ([Figure 12.1](#); Stern 1985).



Figure 12.1 Erechtheion, watercolor depicting inlaid colored glass on columns capitals.

Source: adapted from T.L. Donaldson, 1820 (British Museum 1857, 1212.10).

Our understanding of the role of architectural sculpture is limited by the almost total silence on the topic by ancient authors, who seem to have taken for granted the color and ornament in architecture. The narrative sculptures that for us are some of the most meaningful embellishments of ancient buildings are barely mentioned in ancient accounts. In Pausanias' brief description of the Parthenon as he saw it in the second century CE, he mentions only the subjects of the pediments, bypasses the metopes and inner frieze, and yet provides a long and detailed description of the colossal chryselephantine cult statue of Athena on the interior. Hence, we can only speculate about what meaning architectural sculpture carried for the average viewer in antiquity (Osborne 2000; Hölscher 2009).

Some ancient authors do use architectural settings for dramatic effect, such as the allusions to sanctuaries by Pindar (*Pyth.* 6; Herod. 4; Shapiro [Lapatin] 1988). In a scene set in the Sanctuary of Apollo at Delphi, Euripides in the *Ion* presents the reactions of his chorus to the sculpted narratives confronting them in the sacred temenos. In the parados of the play (lines 184–218), Euripides uses nine direct words for seeing in the space of 36 lines. The chorus, consisting of Athenian women who have accompanied Kreusa to Delphi, looks with pleasure and wonder at the heroic and divine narratives, presumably on the façade of the Temple of Apollo, stories which resonate with the scenes they weave on their looms: first Herakles and the Hydra, and Bellerophon and the Chimaera. These figures may have been akroteria, as they attract the viewers' attention first, and they are the only sculptural

elements that are represented by vase painters on the rare occasions in which they depict temples (Figure 12.2; Halm-Tisserant 2001). Then, on “walls of stone,” the women spy scenes of the gigantomachy and identify Zeus with his thunderbolt flaming at both ends, Dionysos with his *thyrsos*, and their patron goddess, Athena, with her gorgon-faced shield, whom they call “my goddess.” Given the duels of gods and giants, which are featured on the Parthenon’s east metopes, one is tempted to conclude that Euripides is voicing his own experience on the Acropolis of Athens, which for purposes of the play he has transferred to Delphi. Brunilde Ridgway’s description of the effects of architectural sculpture, in her book *Prayers in Stone* (1999: 8), characterizes the reaction of these ancient female sightseers at Delphi: “Architectural sculpture engendered a sense of recognition, a reinforcement of beliefs, even a diffusion of culture that can be compared to the impact of present-day television, videos and billboards” – and today we might add the Internet. We relate to the imagery if we recognize ourselves, our fashions, our institutions, our history, and our mythology.



Figure 12.2 Representation of akroteria on a Greek building. Fragment of a Gnathian calyx-krater from Taranto, ca. 350 BC. Würzburg, Martin van Wagner Museum H4696.

Source: © Martin von Wagner Museum der Universität Würzburg, Photo: P. Neckermann.

Sculpture was just one of the features used in the decoration of Greek temples, and the one that receives the most attention from scholars. Yet to understand

fully the decorative programs of these monuments and their impact on viewers, one must also take into account their development over the centuries from painted figural decoration to statuary in the round, or nearly so, and the essential use of color to articulate key elements of the architecture. This chapter begins with the often-overlooked subject of polychromy, proceeds to relief sculpture and, finally, sculpture in the round. Here the focus is on temples on the Greek mainland (see also [Chapter 6](#) and [Chapter 29](#)). It concludes with a detailed examination of the Parthenon, which in many ways represents the *summa* of Greek temple decoration, including, as it does, both the Ionic and Doric orders, colored elements, metal attachments, and carving in various degrees of relief as well as sculpture in the round.

Color

Paint is the easiest, cheapest, and most efficient medium for decorating architecture, and so it is no surprise that the earliest representations of buildings – terracotta models from Perachora, Argos, and Sparta of the eighth to seventh century BCE – show painted wall and roof ornamentation (Schattner 1990; Catling 1995; Mazarakis Ainian 1997: figs. 499–501; Barletta 2001: 40–46). The apsidal model from Perachora preserves a large running meander along the middle of the outer dark wall, a motif that reappears in early stone architecture (Corfu) and continues well into the Hellenistic period (e.g., the terracotta sima from the Temple of Apollo at Corinth) and beyond. The rectangular model from the Argive Heraion is more elaborately decorated with vertical lines, horizontal dashes, and a vegetal motif on the walls, and stacked meanders, triangles, and S-shaped designs on the roof. These painted motifs are not easy to interpret: they could represent structural elements (timber reinforcements in mudbrick walls?), actual painted decoration on stuccoed walls, or typical designs from the coroplast's repertoire. That they might reflect actual temple ornamentation is suggested by some of the earliest extant mudbrick and stone temples.

There is now increasing evidence that seventh-century, non-peripteral temples had their walls decorated with colorful figurative paintings that reflect contemporary designs on Proto-Corinthian and Corinthian pottery. Small fragments of painted and stuccoed limestone have been found from the mid-seventh-century Temple of Poseidon at Isthmia and the Temple of Apollo at Kalapodi (Broneer 1971: 33–34; Niemeier 2012; D'Acunto 2013: pls. 41–42). The decoration consists of figural motifs, such as one-third life-size hoplites engaged in combat, as well as floral and geometric decoration and a wide array of colors (purple, orange, yellow, blue, black, and white). These fragments preserve evidence of painted bands that frame the scenes, and the range of colors is broader than that used in pottery, such as the Chigi Vase

(640–30 BCE), suggesting that the painters did not necessarily apprentice in ceramicists' workshops (Papapostolou 2002: 58–59).

The presence of framed paintings on the interior (Kalpodī) and possibly exterior (Isthmia) of these temples supports the suggestion that the well-known painted plaques from Temple C at Thermon may not be metopes as originally supposed but rather inserts into the wall (Barletta 2001 (pp. 51–52, 67); challenged by Marconi 2007 (pp. 8–9)). This type of decoration on cella walls was superseded eventually by the advent of peripteral temples and their triglyph-and-metope friezes, but painted terracotta metopal plaques continued to be used. In both Thermon and Kalydon several series of thin terracotta plaques have been found that were once attached to stone backers, these were presumably metopes held in place by triglyphs. The subject matter of these painted metopes is wide-ranging: beasts, hunters, heroes (Perseus), pairs of women deranged by their personal plights (two daughters of Proitos; Chelidon and Aedon), and seated divinities.

Doric architecture also used color for the articulation of specific elements of the entablature. The mid-sixth-century BCE Temple of Apollo at Corinth already provides evidence for the customary polychromy of the Doric order: the primary structural elements, such as columns, capitals, architrave, and metopes are stuccoed white; horizontal members are colored red, and vertical elements black; while the hawksbeak moldings are traditionally decorated in an alternating red and blue leaf design (Pfaff 2003: 103). Extraordinarily well-preserved pieces of colored architectural blocks have been recovered in excavations at Aigina: buried soon after a fire in the mid-sixth century BCE, the colors are still bright and fresh, and include teal, blue, green, and black used to articulate the various elements of the order (Bankel 1993). A fifth-century marble Ionic capital (from an unknown building) from the Athenian Agora was found with bright color (Figure 12.3). The longevity of this scheme is attested by the painted Macedonian tomb façades, which demonstrate that architectural elements were highlighted in paint through the *longue durée* of Doric architecture in mainland Greece.



Figure 12.3 Ionic capital from Athenian Agora. Restoration by Piet de Jong. Courtesy of the American School of Classical Studies, Athens.

Source: Agora Excavations.

Architectural moldings were used from the beginning of stone architecture in Greece; they derive from two Egyptian moldings (the half-round and cavetto) that inspired a range of new profiles. Typically the painted ornament of the moldings reflects its profile: egg and dart for the ovolo; bead and reel for a small half round; Doric leaf for a hawksbeak (Shoe 1936; Altekamp 1991). In some buildings, the moldings were articulated only in paint rather than being carved. The wall crown (epikranitis) and antae of the classical Nike Temple on the Acropolis carried an elaborate painted anthemion (alternating lotus and palmette band), exactly like the carved one on the Erechtheion (Büsing 1990; Hoepfner 2002). The bead and reel above the metopes of the Parthenon was carved in some cases but painted in others, and the reasons for this are not clear (an economic shortcut? an artistic choice?). Even figural friezes sometimes show this type of abbreviation: an early figured frieze from the Heraion at Samos (circa mid-seventh century BCE) includes a row of incised and probably once painted warriors (Moormann 2011: 43, figs. 1–2). The ornament that was developed for architectural use may also be seen on painted pottery and metal vessels used in rituals; thus, the patterns themselves became associated with votive offerings (Stewart 2008: 212).

An early and especially complex example of polychrome decoration, dated to circa 560 BCE, appears on the so-called Hekatompedon on the Athenian Acropolis; the marble cornices framing the pediment were incised and painted with water birds (storks and seagulls) in flight viewed from below alternating with large lotus flowers. The word for pediment in Greek is *aetos* (which also means eagle) and it may have inspired the use of birds here as decoration. Also unusual for its simplicity and abbreviation is the uncarved tympanum (back of gable) from the Athenian Acropolis; its preserved painted decoration consists of a light-colored lioness against a blue background (Wiegand 1904: pl. 6.1–3, B; Walter-Karydi 2004: fig. 327).

With the advent of figurative architectural sculpture, paint was applied liberally to garments, hair, eyes, and weaponry. The best-preserved examples are the numerous limestone sculptures from the archaic pediments on the Acropolis, where the paint was applied directly to the surface. More advanced scientific techniques are aiding in the recovery of lost polychromy, such as the brightly painted marble figures from the pediments of the early fifth-century BCE Temple of Aphaia at Aigina (Figure 12.4; Brinkmann and Wünsche 2007: 120–125). Painted inscriptions naming figures on reliefs, like those on the Siphnian Treasury, indicate another important function of paint in Greek architecture. Occasionally craftsmen inscribed their names right onto the sculpture, such as the name of the sculptor on the Siphnian Treasury; such inscriptions were filled with red miltos to increase visibility. Other

inscriptions on buildings include the famous maxims on the pronaos walls of the Temple of Apollo (such as *gnothi seauton*, “know thyself”), and the inscribed dedication on the stylobate of the Athenian portico at Delphi, all highlighted in paint (Butz 2009). Because blue was often used for the background of friezes, pediments, and inside ceiling coffers (Walter-Karydi 2004: figs. 331–333), it is often assumed that it represents the sky. Since blue triglyphs flank the metopes, their backgrounds typically are either red or unpainted, as in the Parthenon (Williams 2007).

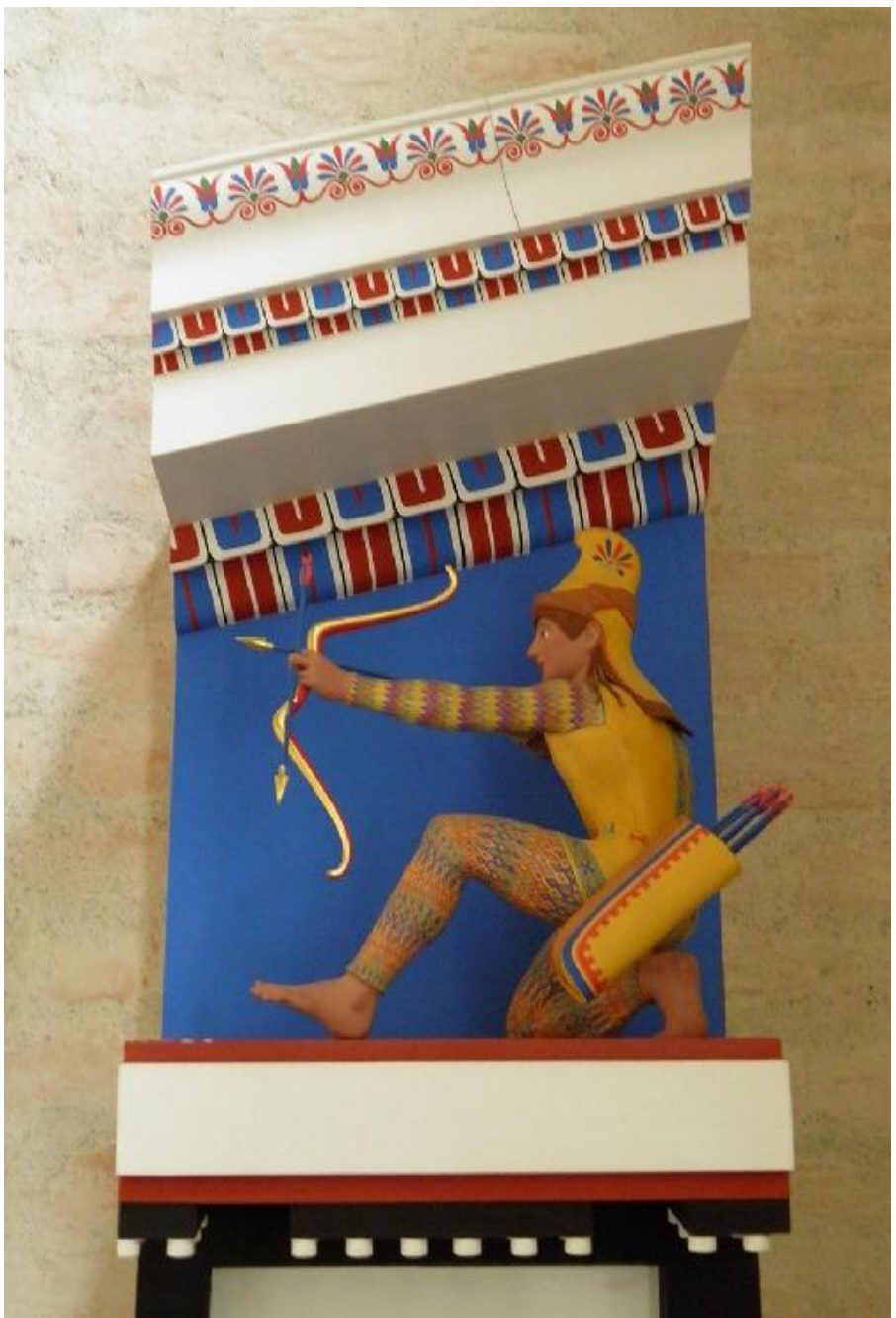


Figure 12.4 Temple of Aphaia, Aigina, painted version of the pedimental archer.

Source: Bibi Saint-Pol, [http://commons.wikimedia.org/wiki/](http://commons.wikimedia.org/wiki/File:Aphaia_pediment_polychrome_model_W-XI_Glyptothek_Munich.jpg)

[File:Aphaia_pediment_polychrome_model_W-XI_Glyptothek_Munich.jpg](http://commons.wikimedia.org/wiki/File:Aphaia_pediment_polychrome_model_W-XI_Glyptothek_Munich.jpg). CC public domain.

A more expensive method of adding color to Greek architecture was through

the use of colored stone. The Ionic frieze of the Erechtheion consists of bluish-grey Eleusinian limestone to which the carved white marble figures were once doweled; as it surmounted the varying wall heights of the building the blue stone band served to unite the disparate parts (Boulter 1970). This technique of piecing different colors of stone was used also for some friezes on the bases that supported cult statues in the interiors of temples (Palagia 2000).

The most colorful decorations on Greek temples and treasuries were the painted terracotta roofing elements, the originals of which were often replaced when worn or outdated: antefixes, simas, akroteria. Monochrome disk akroteria were common in Sparta from an early date, but the best-known and perhaps largest example is a polychrome disk from the Temple of Hera at Olympia, which was over seven feet in diameter. It consisted of a series of brightly painted designs within concentric bands (Winter 1993: 134–136). The Temple of Hera at Mon Repos on Corfu, circa 610 BCE, deployed a riot of color to draw attention to its lion-protome, gorgoneion, and female-head water spouts along the roof-line ([Figure 12.5](#) Sapirstein 2012). The use of painted terracotta on the roof line was a particular specialty of Greek temples in Sicily and southern Italy, and communities in those parts of the Greek world also sent characteristic, locally produced roof assemblages for small treasuries that they dedicated in the great sanctuaries at Olympia and Delphi (see [Chapter 9](#)).



Figure 12.5 Temple of Hera at Mon Repos, Corfu, terracotta water spouts.

Source: P. Sapirstein.

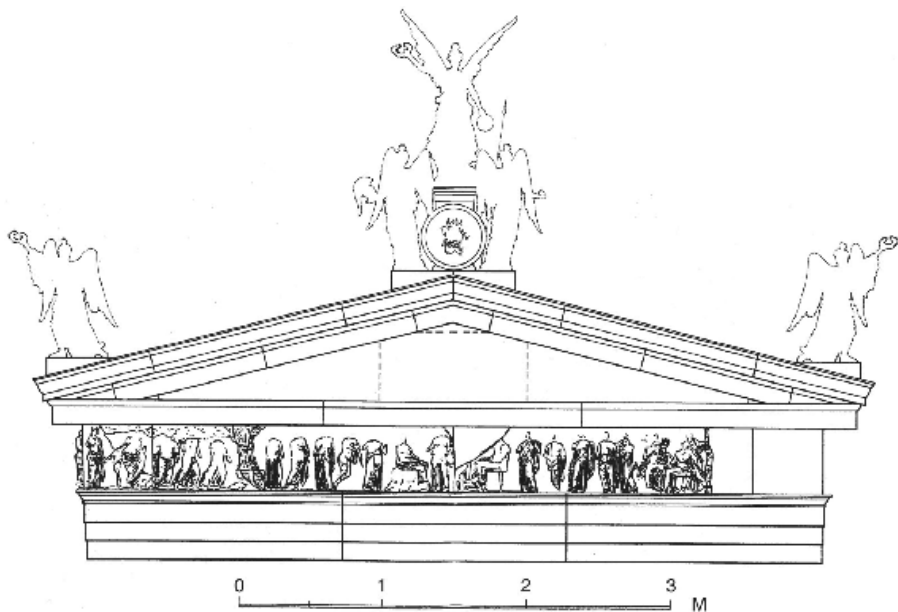


Figure 12.6 Temple of Athena Nike, Athens, reconstruction of the roof akroteria.

Source: P. Schultz.

Paint was clearly intended to draw the viewers' eyes to the upper elements of Greek buildings and was avoided on the lower, structural members. Its purpose may have been to direct the worshippers' attention heavenward, i.e., to the residence of the Olympian gods. Like the statues of divine figures atop Etruscan temples or the painted Pantocrators in the domes of Byzantine churches, the realm of the gods was well above the level of mortals.

Relief Sculpture

After paint, relief work constitutes the next simplest form of temple decoration. Wood is the easiest to carve, but, because it does not survive, we have limited knowledge of its decorative use in architecture: it can only be inferred from smaller-scale items such as furniture attachments. Metal reliefs, which appear to be architectural, have been found at Olympia (Philipp 1994). Literary evidence attests to the use of bronze reliefs with mythological narratives within the Temple of Athena Chalkioikos at Sparta (Paus. 3.17.3), and terracotta was used ubiquitously for mold-made antefixes, simas, and waterspouts at an early date (Winter 1993).

The earliest extant decorative program in stone relief comes from the Temple

of Artemis at Corfu, dated to 580 BCE (Boardman 1978: fig. 187.1–6). While its west pediment with central Gorgon flanked by panthers is famous, less well known is the fact that the Doric building had carved metopes (Bookidis 1967: 177–182). The best-preserved fragment shows a hoplite shooting to the left and the hand of a second figure behind, possibly the duel of Achilles and Memnon with their mothers, with the next panel to the left representing the opponents in mirror image. This narrative use of two metopes occurs again on both the Sikyonian Treasury at Delphi (circa 560 BCE; Boardman 1978: fig. 208.1–3), where the ship Argo and a boar hunt each take up at least two adjacent panels, and on the frieze from the early Heraion at the Foce del Sele, which featured a centauromachy, a cycle of Herakles' labors, and an epic cycle about the Trojan War, all in its metopes. The Athenian Treasury at Delphi extended this use of adjacent metopes (with alternating triglyphs) for a single subject by spreading the story of the Cattle of Geryon across all six metopes on the west side (Boardman 1978: fig. 213).

Another way in which the narrative potential of metopes was exploited was cyclical, that is, featuring the individual exploits of a hero in a series. The twelve labors of Herakles occur for the first time in their entirety on the two porches, east and west, of the Temple of Zeus at Olympia (Boardman 1985: fig. 22). The youthful deeds of Theseus and his labors are paired on Athenian monuments: the Athenian Treasury at Delphi and the Hephaisteion in Athens. This deliberate pairing may have been an effort on the part of the Athenians to elevate their local hero to the stature of the Panhellenic Herakles. Heroic duels with wild animals, monsters, and Amazons fit well on the square or rectangular space provided by the metopes, and they telegraphed to the viewer *exempla* of courage and heroism. (Barringer 2008: 113–122).

Two of the metopes at Olympia are highly innovative in the way that the narrative makes use of the physical relationship of the sculptured scene to the surrounding architectural elements, thereby integrating closely the story and the architecture. On a metope (East 12) that shows the hero cleaning the Augean stables, Herakles uses his long pry bar wedged against the neighboring triglyph. In the tenth metope of the series, in which he shoulders the heavens while Atlas returns with the apples of the Hesperides, the roofing beam above the panel acts in effect as his load, and suggests that the upper part of the temple is a symbol of the universe he supports. This clever and effective play of architectural elements in the narrative was an unusual phenomenon, but other kinds of experiments with spatial representation continued. Figured metopes were used in sacred buildings of the first half of the fourth century, such as in the Tholos in the Marmaria at Delphi, where there is both an inner and an outer series. Some of the figures were carved in such deep relief they are almost in the round, clinging to the back of the metope with only a foot or a hand, with the rest of the body hanging out in space above the viewer (Boardman 1995: fig. 13.1–3). Eventually such

virtuoso carving disappeared from metopes, whether for economic reasons, fashion, or perhaps because of some perceived narrative discontinuity implicit in the presence of triglyphs. The Doric order itself began to be eclipsed by the Ionic and Corinthian orders, where friezes could be continuous. In the second half of the fourth-century BCE, metopes like those on the Doric and Corinthian Tholos in the Sanctuary of Asklepios at Epidauros, the most lavishly ornate building in the sanctuary, feature repeated rosettes that resemble *phialai* (shallow dishes used for libations to the gods), perhaps representing a shift toward more symbolic, abstracted ornament.

Continuous Ionic friezes gained in popularity over time, even on Doric structures, perhaps because they lend themselves well to longer, more complex narratives, uninterrupted by the framing element of the Doric triglyphs. The simplest approach was to present a different subject on each of the four sides of the building, as on the Siphnians' Treasury at Delphi (Boardman 1978: fig. 212.1–4) or the Nike Temple on the Acropolis (Boardman 1985: figs. 127–128). Some later friezes, like the two on the porches of the Hephaisteion (a centauromachy on the west, and a battle before seated gods on the east; Boardman 1985: figs. 112–114), the three on the Temple of Poseidon at Sounion (gigantomachy, centauromachy, deeds of Theseus; Boardman 1985: fig. 120) or those on the interior walls of the Temple of Apollo at Bassai (centauromachy, Amazonomachy; Boardman 1995: fig. 5.1–5), present unrelated subjects. The interior treatment of the temple at Bassai exemplifies the movement toward elaborating the interior of temples (see [Chapter 15](#)).

The narrative subjects of the friezes are sometimes standard and obvious to informed modern viewers (centauromachies, Amazonomachies), but on some buildings the subjects are not at all clear and are much debated, such as the inner east frieze of the Hephaisteion. Another interesting question is the relationship of the subject matter of the sculptural ornament to the deity to whom the temple or treasury is dedicated: it is not always evident that there is any relationship at all. The Parthenon again stands out as exceptional, as we shall see later in the chapter, and only here is a single narrative achieved on a four-sided frieze around the upper walls of the cella: a procession, contests, and offerings in honor of Athena.

The pediments of temples formed by the two ends of the characteristic gabled roof provided the builders with large and challenging voids that custom dictated should be filled. A long, low triangular frame had to be accommodated with eye-catching, significant decoration. The motif of a central figure with flanking felines was an early solution, as in the Temple of Artemis at Corfu, and perhaps might have been inspired by the still visible Lion Gate of Mycenae, or small-scale imported objects from the Near East that bore the heraldic motif. Already the architect of this early temple at Corfu hit on the solution of dead or dying figures in the constricted corners, in this

case giants. Later pedimental sculpture featured chariots and horses, convenient devices for flanking the central space because of their tall heads and lower flanks; in a low-relief pediment from an early Archaic treasury on the Athenian Acropolis, Iolaus stands in a chariot with grazing horses (soon to be attacked by a giant crab from the far corner), while Herakles battles the Hydra, whose squid-like body fills the other corner (Boardman 1978: fig. 196). The smaller pediment of the Siphnian Treasury at Delphi may represent a transitional mode of carving with the lower parts of the figures still attached to the tympanum wall and the upper parts carved free of it (Boardman 1978: fig. 211).

By the early Classical period, the sculpture in this space was sculpted fully in the round, and a unity of subject matter and scale was achieved as on the Athena/Aphaia Temple on Aigina, where narrative cycles concerning the Trojan War fill both sides. Chariots appear more gloriously in a narrative role in the east pediment of the Temple of Zeus at Olympia, even though because of their scale they are not fully carved in the round. Viewers now and in antiquity would have known of the momentous race between Oinomaos and Pelops upon which so much depended: the whole history of his descendants (the house of Atreus), even the Trojan War itself, could be said to have sprung from the results of this great chariot race. Reclining local river gods occupy the far corners and frame the scene, reminding the viewer that the race took place *here*. On the west pediment of the same temple, a standard subject, a centauromachy, is given fresh life and vitality with the emphasis on the bride and her party, and her older female attendants looking on aghast at the events from reclining positions in the far corners (Boardman 1985: figs. 20–21). Thus the challenge of an awkward, low triangular space was fully met by the first half of the fifth century BCE. The vivid scenes of past struggles, heroic encounters and divine interventions that still resonated in the present now were framed by the abstract, orderly, predictable rhythms of the Doric temple.

Sculpture in the Round

The pediments at the Aphaia Temple demonstrate a viable solution to the problem of the triangular space: a central deity (Athena) with a battle raging on either side, consisting of dueling warriors who assume positions ranging from upright to fallen in the corners. This scheme is followed at Olympia with Apollo presiding over the chaos of the centauromachy in the west pediment, while a supposedly calmer scene prevails in the east pediment (the moment just before the great the chariot race of Pelops and Oinomaos), with a well over life-size Zeus in the center. The Temple of Apollo at Delphi illustrates the challenges of situating a deity in the center: on the archaic temple, Apollo rides in a frontal chariot and necessarily appeared much diminished in scale,

and in the fourth-century replacement he is possibly seated on his tripod, another unsuccessful attempt to portray the epiphany of the great god of the sanctuary. Sculptors experimented with different kinds of narrative, and by the fourth century BCE, a non-divine (but heroic) figure can appear in the center of the pediment, as evidenced by the mounted Amazon at Tegea (Boardman 1995: fig. 10.1–2).

Three-dimensional akroteria crowned some of the treasuries at Delphi and Olympia even in the Archaic period, such as the Siphnian Treasury at Delphi. Winged figures, like Nike, were especially favored, and at times they proliferate, perhaps occurring as often as eight times in gilded bronze on a temple roof (e.g., Temple of Athena Nike: Schultz 2001; Petit 2013) (Figure 12.6). Group akroteria, in particular divine abduction scenes, are featured in the later fifth century, such as Boreas and Oreithyia on the Temple of the Athenians on Delos. On the Temple of Asklepios at Epidauros, the two lateral akroteria are women riding horses and probably represent the healing land and sea breezes. What distinguished these female rooftop figures is fluttering drapery, bared breasts, and highly mobile poses, which read well against the open sky. Such akroteria contributed a dramatic aspect to the overall appearance of the temple, and they attracted the attention of vase painters, who feature them in painted representations of temples.

Finally, a rare but much emulated use of sculpture in the round for architecture is the caryatid, or standing, draped female figure that replaces the column. Caryatids first appear on small Ionic treasuries at Delphi (as a pair in antis, substitutes for columns) but later form a prostyle six-figured support for the south porch of the Erechtheion on the Acropolis. The concept of a female as a support was not new, as they appeared earlier in stone perirrhanteria (Boardman 1978: figs. 74–77) and as handles for bronze mirrors. The capitals on their heads are elaborately carved and resemble baskets, such that these maidens may have been thought of as *kanephoroi*, (carriers of baskets in a ritual procession) especially as they appear in a sacred context (Shear 1999). Their male counterparts, known as Telemones or Atlantes, appear only in the west (Sicily and South Italy), again as mirror supports, but also on a monumental scale as parts of the wall of the Temple of Zeus in Agrigento. In Roman Italy, the type of the Erechtheion caryatids was borrowed, based on copies made from the originals, probably when repairs were made to the temple in Athens. They were then used in the upper story of the Forum of Augustus at a smaller scale; for Agrippa's Pantheon (the predecessor of Hadrian's Pantheon) at full scale; and in the Villa of Hadrian. One of their later revivals was in the matching pair of porches on the church of St. Pancras in London, built 1819–1822 by William and Henry Inwood. In spite of the later popularity of caryatids, we should bear in mind that they were used rarely in Greek architecture.

While cult statues are not architectural sculpture per se, they had a direct

impact on the design of temple interiors, which were configured to accommodate them. One example is the pi-shaped colonnade that formed an elegant frame for the Athena Parthenos and was used in a modified form in the Temple of Apollo at Bassai. The Parthenon, as we now know, also had windows in the east cella wall, which would have allowed better illumination of the cult statue inside. At least two temples had shallow, rectangular pools of water (Parthenon) or oil (Temple of Zeus at Olympia) in front of the cult statues (Paus. 5.11.5 and attested archaeologically). These pools not only prevented the chryselephantine statues' ivory from drying and cracking but also would have reflected light upon the divinity.

The Parthenon

The Parthenon's sculptural and polychromal program may be one of the most elaborate in antiquity, and its impact on later architectural sculpture was significant (e.g., quotations of poses on the Altar of Zeus at Pergamon, and for the giants of the Roman Odeion in the Athenian Agora). With its 524-foot-long low relief frieze, its 92 high relief metopes, its pediments filled with 50 over-life-size figures, and its six akroteria, it carries more decoration than any other temple of its size (Neils 2005). Although there are few traces of color left on the sculpture today, we have every reason to believe they were fully painted. On the temple itself, the moldings preserve considerable painted ornament, notably the crown molding above the frieze, the epikranitis, and the ceiling coffers. The interior Ionic frieze most likely had a blue background like the friezes on the contemporary Hephaisteion, and for clarity, the numerous overlapping horses of the cavalcade would have been painted alternating light and dark colors. The metopes probably had a white background, but the figures would have been colored (Williams 2007). Little is known about the coloring of the pediments, but the presence of drill holes on all of the sculptures indicates attachments (reins, wreaths, hair, sandals etc.) in gleaming bronze, perhaps some of it gilded.

The pediments of the Parthenon represent the culmination of a long tradition of pedimental sculpture in Athens – 12 pediments alone in the Archaic period and more than anywhere else in Greece (Bookidis 1967: 416). The subjects are now strictly tied to the divinity worshipped, Athena, with her birth on Mt. Olympos on the east façade and her contest with Poseidon in Attica on the west façade (Palagia 1998). While she is subordinate in size to Zeus and Poseidon, she is shown in her most glorious moments accompanied by Nike (as her charioteer in the west, and possibly crowning her in the east). The corners of the pediments are filled with spectators and participants, gods and goddesses in the east and Attic kings and queens in the west. Thus, in a not-so-subtle way, the designer is equating Mt. Olympos with Athens, and

heroizing the ancestral Athenians. If Manolis Korres (1994) is correct in restoring flying Nikai as lateral akroteria at the corners of the pediments, this overall theme of victory was further reinforced.

Military victory is certainly the major theme of the four series of metopes. While the Amazons appear to be winning in the west, the fight is in full force on the east (gigantomachy) and south (centauromachy). On the north, victory has been achieved with the fall of Troy and the recovery of Helen by Menelaus. The latter may indicate a secondary theme, namely the importance of marriage and the *oikos*. The problematic central south metopes (known mainly from drawings), which do not depict centaurs, may represent the wedding of Perithoös, which prompted the fight after the guest centaurs became inebriated and began to rape the female attendees, a severe violation of guest friendship.

Women are also prominently featured in the Ionic frieze of the Parthenon, a non-Doric feature that may have a precedent on the Old Athena Temple built on the north side of the Acropolis. There are 32 females on the east frieze, an unprecedented assemblage, all of whom are involved in the ritual for Athena. In their demure robes and with solemn countenances, these tamed Athenian women contrast markedly with the uncontrolled females, the mounted Amazons, at the other end of the temple. This novel idea of putting on a temple actual Athenians, in their tribal ranks as cavalry and as racing charioteers in the famous local *apobates* contest (Neils and Schultz 2012) and in a dignified Panathenaic procession, is unprecedented in Greek art and demonstrates the extent to which Athenian pride dictated the content of the temple's program. It also illustrates a shift from referencing past events to the vivid present as appropriate ornament for a temple.

This ambitious program also set new parameters for architectural sculpture by subduing the added color, breaking the bounds of the architectural frames, and including specific landscape elements. These innovations would have added greater realism to the decoration and may have served to attract closer scrutiny on the part of viewers. We know that the Greeks strived for convincing realism in painting and made deliberate efforts to captivate (*thaumazein*) their audience, and the aims would have been no different in painted architectural sculpture. The painters of the Parthenon sculptures avoided the ornamental motifs that ran riot on the drapery of archaic marbles and limited themselves to color (green, red, yellow) and dark underpainting in the drapery folds to heighten the three-dimensional effect (Brinkmann and Wünsche 2007: 30–31).

The pedimental figures burst out of their triangular field, as, for instance, the much-admired horses of Nyx in the east pediment. The two corners now frame the central scene temporally, not just locally: this was the dawning of a new day when Athena was born. Helios, a ubiquitous god by his nature, appears a second time on the east façade in the gigantomachy immediately

below the pediment: in a new reconstruction of Helios' quadriga, two cavorting fish and a water fowl carved along its lower portion indicate the water and shore near which Helios was driving, and a cutting in the upper right may once have been filled with a bronze sun disk (East metope 14: Schwab 2009) (Figure 12.7).



Figure 12.7 Parthenon, Helios driving his chariot (East Metope 14), drawing.

Source: K. Schwab.

The location in Athens of the events in the sculpted imagery on the temple is emphasized in numerous details in addition to the overall narrative itself. The large rock under the foot of the winner apobates runner on the north frieze (N 47), for example, may represent the famous rocky outcrop in the City Eleusinion where the race ended (Neils and Schultz 2012). Another dramatic innovation is the way in which the designer depicted the 12 seated Olympians on the east frieze; although they appear to have their backs to the central peplos ceremony, they in fact should be read as seated in a semicircle with Athena next to her father Zeus, as we know from Pindar (*Nem.* 4, 66–69; see

The vast sculptural program of the Parthenon raises important questions regarding patronage (Pericles or the *boule*?), authorship (Pheidias or others?), visibility (Osborne 1987, 2009; Marconi 2009), and especially meaning. Much of the iconography is seen here for the first time and may have been specifically devised for the building (the contest of Athena and Poseidon, the ceremony for the peplos, the apobates race as a tribal event, the 10 eponymous heroes and possibly their female counterparts, the 10 heavily draped women on the east frieze). Some of these novel themes may in fact reference Periclean policies: might the west pediment allude to controversy over jury pay? (Pollitt 1997) Does the large number of horsemen on the Ionic frieze refer to the increase in the size of the cavalry? (Jenkins 2005) And with women included, is there an allusion to the Citizenship Decree that required both parents of a citizen to have been Athenians (Neils 2005)? If we are correct in reading the scenes this way, the Parthenon's sculptural program becomes a strong advertisement of the political, military, and civic ideology of classical Athens.

The Parthenon best demonstrates the ways in which the ancient Greeks deployed architectural decoration to enhance one's religious experience. The wonder of seeing painted lifelike, often life-size figures acting out the dramatic narratives of myth-history and civic life must have been felt by most visitors to the Acropolis, just as the Euripidean chorus of women visiting Delphi exclaimed over the legendary sculptures they encountered. From its very beginnings, figurative decoration, whether painted or carved, was an intimate part of Greek architecture and in no small way enhanced the visual impact of these sacred buildings. The temples became a locus of sacred narrative, and by far the most colorful objects in the landscape.

FURTHER READING

Ridgway's thorough overview of architectural sculpture (1999) is updated by the first chapter in Marconi 2007. Boardman's various handbooks (1978; 1991; 1995) provide convenient illustrations of major monuments. For akroteria see Danner 1989. Schultz and von den Hoff (2009) present new approaches to architectural sculpture, and Ashmole 1972 is still well worth reading. Up-to-date monographs on individual buildings are needed, but there is no shortage of books on the Parthenon's sculptures (Palagia 1998; Neils 2001; 2005; Jenkins 2006). Finally, for more on color on architectural decoration, see Bankel and Liverani 2004, Brinkmann and Wünsche 2007, and Brecoulaki 2014.

REFERENCES

- Altekamp, S. 1991. *Zu griechischer Architekturornamentik im sechsten und fünften Jahrhundert v. Chr.* Frankfurt.
- Ashmole, B. 1972. *Architect and Sculptor in Classical Greece*. New York.
- Bankel, H. 1993. *Der spätarchaische Tempel des Aphaia auf Aegina*. Berlin.
- Bankel, H. and P. Liverani, eds. 2004. *I colori del bianco: policromia nella scultura antica*. Rome.
- Barletta, B.A. 2001. *The Origins of the Greek Architectural Orders*. Cambridge.
- Barringer, J.M. 2008. *Art, Myth, and Ritual in Classical Greece*. Cambridge.
- Barringer, J.M. and J. Hurwit, eds. 2005. *Peircklean Athens and Its Legacy: Problems and Perspectives*. Austin.
- Boardman, J. 1978. *Greek Sculpture: The Archaic Period*. London.
- Boardman, J. 1985. *Greek Sculpture: The Classical Period*. London.
- Boardman, J. 1995. *Greek Sculpture: The Late Classical Period*. London.
- Bookidis, N. 1967. "A Study of the Use and Geographical Distribution of Architectural Sculpture in the Archaic Period." PhD dissertation, Bryn Mawr College.
- Boulter, P.N. 1970. "The Erechtheion Frieze." *AntP*, 10: 7–28.
- Brecoulaki, H. 2014. "'Precious Colours' in Ancient Greek Polychromy and Painting: Material Aspects and Symbolic Values." *RA*, 57.1: 3–35.
- Brinkmann, V. and R. Wünsche, eds. 2007. *Gods in Color: Painted Sculpture of Classical Antiquity*. Munich.
- Broneer, O. 1971. *Isthmia I: The Temple of Poseidon*. Princeton.
- Buitron-Oliver, D., ed. 1997. *The Interpretation of Architectural Sculpture in Greece and Rome*. Studies in the History of Art 49. Washington, DC.
- Büsing, H. 1990. "Zur Bemalung des Nike-Tempels." *AA*, 71–76.

Butz, P. 2009. "Inscription as Ornament in Greek Architecture." In Schultz and von den Hoff, eds., 30–39.

Catling, R.W.V. 1995. "Archaic Laconian Architecture: The Evidence of a Temple Model." *ABSA*, 90: 317–324.

D'Acunto, M. 2013. *Il mondo del vaso Chigi*. Berlin.

Danner, P. 1989. *Griechische Akrotere der archaischen und klassischen Zeit*. Rome.

Halm-Tisserant, M. 2001. "La Représentation perspective des edifices dans la peinture de vases grecque." In Muller, ed., 383–408.

Hoepfner, W. 2002. "Farbe in der griechischen Architektur." In Tiverios and Tsiafakis, eds., 37–45.

Hölscher, T. 2009. "Architectual Sculpture: Messages? Programs? Towards Rehabilitating the Notion of 'Decoration.'" In Schultz and von den Hoff, eds., 54–67.

Jenkins, I. 2005. "The Parthenon Frieze and Perikles' Cavalry of One Thousand." In Barringer and Hurwit, eds., 146–160.

Jenkins, I. 2006. *Greek Architecture and Its Sculpture*. London.

Korres, M. 1994 "The Architecture of the Parthenon." In Tournikiotis, ed., 54–97.

Marconi, C. 2007. *Temple Decoration and Cultural Identity in the Archaic Greek World: The Metopes of Selinus*. Cambridge.

Marconi, C. 2009. "The Parthenon Frieze: Degrees of Visibility." *RES*, 55/56: 157–173.

Mazarakis Ainian, A. 1997. *From Rulers' Dwellings to Temples: Architecture, Religion and Society in Early Iron Age Greece (1100–700 B.C.)*. Jonsered.

Moormann, E. 2011. *Divine Interiors: Mural Paintings in Greek and Roman Sanctuaries*. Amsterdam.

Mugione, E. and A. Benincasa, eds. 2012. *L'Olpe Chigi, Storia du un agalma*. Atti del Convegno internazionale, Salerno, 3–4 giugno, 2010. Salerno.

Muller, B., ed. 2001. "*Maquettes architecturales*" de l'antiquité. Actes du Colloque Strasbourg 3–5 décembre 1998. Paris.

Neils, J. 2001. *The Parthenon Frieze*. Cambridge.

Neils, J., ed. 2005. *The Parthenon from Antiquity to the Present*. Cambridge.

Neils, J. and P. Schultz. 2012. "Erechtheus and the *Apobates* Race on the Parthenon Frieze (North XI–XII)." *AJA*. 116: 195–207.

Niemeier, W.D. 2012. "The Olpe Chigi and New Evidence for Early Archaic Greek Wall-painting from the Oracle Sanctuary of Apollo at Abai (Kalapodi)." In Mugione and Benincasa, eds., 79–86.

Osborne, R. 1987. "The Viewing and Obscuring of the Parthenon Frieze." *JHS*. 107: 98–105.

Osborne, R. 2000. "Archaic and Classical Greek Temple Sculpture and the Viewer." In Rutter and Sparkes, eds., 228–246.

Osborne, R. 2009. "The Narratology and Theology of Architectural Sculpture *or* What You Can Do with a Chariot but Can't Do with a Satyr on a Greek Temple." In Schultz and von den Hoff, eds., 2–12.

Palagia, O. 1998. *The Pediments of the Parthenon*. Leiden.

Palagia, O. 2000. "Meaning and Narrative Techniques in Statue-bases of the Pheidias Circle." In Rutter and Sparkes, eds., 53–78.

Papapostolou, J.A. 2002. "Colour in Archaic Painting." In Tiverios and Tsiafakis, eds., 53–64.

Petit, T. 2013. "The Sphinx on the Roof: The Meaning of the Greek Temple Acroteria," *ABSA*, 108: 201–234.

Pfaff, C.A. 2003. "Archaic Corinthian Architecture, ca. 600–480 b.c." In Williams and Bookidis, eds., 95–140.

Philipp, H. 1994. "ΕΑΛΚΟΙ ΤΥΕΟΙ – Eherne Wände." *AA*, 489–98.

Pollitt, J.J. 1997. "The Meaning of the Parthenon Frieze." In Buitron-Oliver, ed., 51–65.

Ridgway, B.S. 1999. *Prayers in Stone: Greek Architectural Sculpture (ca. 600–100 B.C.)*. Berkeley.

Rutter, N.K. and B.A. Sparkes, eds. 2000. *Word and Image in Ancient Greece*. Edinburgh.

Sapirstein, P. 2012. "The Monumental Archaic Roof of the Temple of Hera at Mon Repos, Corfu." *Hesperia*, 81 (1): 31–91.

Schattner, T.G. 1990. *Griechische Hausmodelle: Untersuchungen zur frühgriechischen Architektur*. *AthMitt*, Beiheft 15. Berlin.

Schultz, P. 2001. "The Akroteria of the Temple of Athena Nike," *Hesperia*, 70: 1–47.

Schultz, P. and R. von den Hoff, eds. 2009. *Structure, Image, Ornament: Architectural Sculpture in the Greek World*. Oxford.

Schwab, K. 2009. "New Evidence for Parthenon East Metope 14." In Schultz and von den Hoff, eds., 79–86.

Shapiro [Lapatin], K. 1988. "ΥΜΝΩΝ ΘΗΣΑΟΠΟΣ: Pindar's Sixth Pythian Ode and the Treasury of the Siphnians at Delphi." *MH*, 45: 1–5.

Shear, I.M. 1999. "Maidens in Greek Architecture: The Origin of the 'Caryatids'." *BCH*, 123: 65–85.

Shoe, L.T. 1936. *Profiles of Greek Mouldings*. Cambridge, MA.

Stern, E.M. 1985. "Die Kapitelle der Nordhalle des Erechtheions." *AM*, 100: 405–426.

Stewart, A. 2008. *Classical Greece and the Birth of Western Art*. New York.

Tiverios, M.A. and D.S. Tsiafakis, eds. 2002. *Color in Ancient Greece: The Role of Color in Ancient Greek Art and Architecture*. Thessaloniki.

Tournikiotis, P., ed. *The Parthenon and Its Impact in Modern Times*. Athens,

Walsh, J.St.P. 2009. "Exchange and Influence: Hybridity and the Gate Reliefs of Thasos." In Schultz and von den Hoff, eds., 174–187.

Walter-Karydi, E. 2004. "Il colore dello sfondo nei rilievi." In Bankel and Liverani, eds., 225–234.

Wiegand, T. 1904. *Die archaische Poros-Architektur der Akropolis zu Athen*. Cassel.

Williams, C.K. and N. Bookidis, eds. 2003. *Corinth, The Centenary 1896–1996*. Corinth 20. Princeton.

Williams, D. 2007. "A Virtual Parthenon Metope: Restoration and Colour." In Brinkmann and Wünsche, eds., 112–117.

Winter, N.A. 1993. *Greek Architectural Terracottas from the Prehistoric to the End of the Archaic Period*. Oxford.

Yavis, C.G. 1949. *Greek Altars: Origins and Typology*. St. Louis.

CHAPTER 13

Attic Sanctuaries

Jessica Paga

The extensive territory of Athens, the area referred to as Attica, contained numerous sanctuaries, shrines, and sacred precincts. These sacred areas varied in size, layout, popularity, and location, but all functioned to incorporate ritual practices into the everyday lives of Athenian citizens outside of the Acropolis and urban center of the *asty*. These sanctuaries can be considered extra-urban to the polis center, but they often served as important urban centers within their specific demes, or villages. As a mixture of extra-urban, or peripheral, and urban spaces, these sanctuaries served multiple purposes for the population of Attica ([Map 13.1](#)). This chapter presents six examples of Attic sanctuaries of the late Archaic and Classical periods, divided into two categories based on their principal ritual purposes. The first group, including Eleusis, Sounion, and Brauron, were sites of Panathenian festivals and, in many respects, can be considered under the rubric of polis religious activity. The second group, encompassing Rhamnous, Cape Zoster, and Ikaria, are more properly evaluated as deme-specific sanctuaries that, while certainly accessible to other demesmen and Athenians, nevertheless catered to their immediate populations.



Map 13.1 Map of Attica, with demes discussed in this article indicated.

Modified from Camp 2001, fig. 248. © Michael Djordjevtich.

Geography and Politico-Spatial Organization

Attica is defined by three major mountain ranges: Parnes in the northern region, which separated Attica from the territory of Boeotia; Pentelikon to the northeast, whose exploitation provided the Athenians with a seemingly unquenchable supply of fine marble; and Hymettos to the southeast, known for its abundant honey and peak Sanctuary to Zeus. In addition, the smaller range of Aigaleos stretches to the west, through which the Sacred Way

originally wove from Athens to Eleusis. These mountain ranges also served to contain (and restrict) the principal plain regions of Attica. The Thriasian plain near Eleusis was particularly arable, and the relatively flat areas to the east of Mt. Hymettos, stretching towards the sea, were also used for extensive farming (Osborne 1985: 47–63). In general, Attic soils did not produce a high yield of grain but olives and grapes were plentiful. Perhaps to a greater extent than the mountains, the area of Attica was delimited by its coastal regions, including a variety of natural harbors and sheer cliffs. These coasts, encircling approximately three-quarters of Attic territory, informed Athens' maritime perspective and functioned as both a weakness and power during the Archaic and Classical periods. The coasts facilitated trade and communication, and contributed to the high level of prosperity that would come to characterize Athens in the fifth century.

These discrete geographic regions played a significant role in Athenian social and political developments. During the Archaic period, the population of Attica seems to have been roughly divided into three factions – the Hill, Plain, and Coast – that mirror the main topographic areas of Attic territory (Hdt. 1.59; *Ath. pol.* 13; Hopper 1961). This tripartite division was extended with modifications into the Classical period through the Kleisthenic reforms. Under the new democracy, the population of Attica was divided into 10 *phylai* (tribes), which were further subdivided into three *trittyes* (thirds) each, labeled according to geographic location – coastal, inland, and city – for a total of 30 trittyes. Each individual deme (village), of which there were 139, belonged to one of the three trittyes within its particular *phyle*. According to pseudo-Aristotle, the goal of these divisions was to “mix up” the population of Attica, loosening the bonds of the aristocracy and emphasizing location, rather than birth or wealth, as the most important classification for citizenship (*Ath. pol.* 21).

In addition to the reorganization of the countryside, Kleisthenes also emphasized the use of the demotic in place of the patronymic as a form of self-identification (*Ath. pol.* 21.4). The use of the demotic rather than the patronymic underscores this transformation of Athenian social identity by creating an immediate link between citizen and topographic location, in place of an association between citizen and family. Citizenship was now dependent on belonging to a specific deme in Attica. The demes, frequently described as the “building blocks” of the democracy, were thus invested with a power or authority that seems to have been previously understated or not acknowledged by the centralized government (such as it existed in the Archaic period): it now mattered precisely *where* you were from, rather than who your father was. This level of specificity instantly and integrally linked every citizen with a single deme – a type of individual site specificity – and was a measure that granted demes a form of recognition that conveyed a sense of autonomy. This autonomy, however, did not mean independence from the new political

system of Athens. Rather, it was an autonomy contained within a larger matrix of inclusion: the demes belonged to the Athenian polis, but the polis was made up of the individual demes and could not exist without them.

For the purposes of the current study, a sanctuary can be defined as a sacred space delineated by a *temenos* (boundary line or wall), and containing an altar and a temple or shrine. There were, of course, many sanctuaries in the Greek world that lacked temples – the altar being the *sine qua non* of a sanctuary – but the temple, owing to its size and materiality, is here retained as a qualifier of monumentality. The *temenos* could be articulated with fortification walls, as at Eleusis, or a simple fence or parapet, or a series of *horoi* (boundary stones). The significance of the *temenos* was to delimit (literally to “cut off”) the area of the sacred precinct from profane space. The altar functioned as the site of sacrifice and libation, and therefore as the point of communication between the mortal worshippers and the divine recipients. The temple housed the cult statue of the god and could also serve as a repository for offerings.

Panathenian sanctuaries form an identifiable category of sanctuaries in Attic, because they have specific administrative, financial, or ritual ties to the polis. These sanctuaries may be recognized by the presence of state festivals or rituals that united or included the broader population of Athens. The principal religious festival of the Athenian polis was the Panathenaia, but several other annual festivals occurred in sanctuaries outside the asty, frequently articulated with centrifugal processions (*pompai*) from the city center to the deme (see Graf 1996 for the role of processions). In addition to what might be referred to as “state festivals,” it is also possible to identify sanctuaries that appealed to and included broader segments of the Athenian populace via specific ritual practices and events. Sanctuaries connected with rites of passage, for example, including marriage and maturation rituals, would fall under this rubric.

The other principal category of Attic sanctuaries is deme-specific ones. These sanctuaries are highlighted by the presence of festivals that focus on a specific deme, or small group of demes within a common area. These sanctuaries may be open to worship from non-demesmen and other Athenians, but such extra-deme participation is often not frequent or leaves few traces in the literary and archaeological evidence. An example of this type of deme specificity can be seen in the celebrations of the Rural Dionysia. This festival, as a counterpart to the Greater or City Dionysia, which occurred in the asty, seems to have occurred in specific demes based on their *trittys* affiliation (Paga 2010). Only the demes within a particular *trittys*, or possibly those in the immediate vicinity of the theatral area, would participate in these celebrations. Local deities and site-specific heroes should also be included in this designation of deme-specific sanctuaries, such as the grove of the Eumenides at Colonus (Soph. *OC* 42–75).

In what follows, examples of both Panathenian and deme-specific sanctuaries

are presented, in order to elucidate the salient features of each and draw comparisons in terms of ritual practice and architectural articulation. Although the Panathenian sanctuaries, in most cases, are more lavishly appointed and tend to have larger and more impressive structures, the deme sanctuaries do not lack for temples, altars, inscriptions, votive dedications, and other features, nor is the fundamental ritual practice of honoring the gods through sacrifice, libations, prayers, and offerings noticeably different between the two types of sanctuaries. All of the Attic sanctuaries – small and large, Panathenian and deme-specific – can be interpreted as physical manifestations of the practice of euergetism, whereby mortals enter into a social contract of positive reciprocity with the gods, as well as nodes of communication and interaction between fellow demesmen, neighbor demesmen, and the broader Athenian populace.

Panathenian Sanctuaries

We turn first to the Sanctuary of Demeter and Kore at Eleusis ([Figure 13.1](#)). The deme of Eleusis is located in the southwest corner of Attica, approximately 14 miles from the asty of Athens ([Map 13.1](#)). Eleusis lies within the Thriasian plain, which forms part of the western extent of Attica, stretching between the Bay of Eleusis to the south and Mt. Parnes to the north. Eleusis is the largest deme in this area, in the coastal trittys of phyle VIII, Hippothontis. The deme has a bouleutic quota of perhaps 11, which puts it on par with several of the larger demes (e.g., Piraeus, Euonymon, and Marathon; see Traill 1975 (67–70) for the bouleutic quotas). The relatively large size of Eleusis was due in part to the renown of its sanctuary but also to its function as a border site: the area of the Thriasian plain acted as the border with the territory of Megara. Several of the features of Eleusis betray this dual function of cult center and border guard, and its intrinsic military and territorial role likely contributed to the Panathenian nature of the sanctuary.



Figure 13.1 Eleusis, view of the Telesterion.

Source: J. Paga.

The principal features of the sanctuary at Eleusis include the main cult building, often referred to as the Telesterion, the massive fortification walls that encompass the sanctuary and serve as a type of temenos, and the Kallichoron well, which occupies an important role in the mythology of the site and the festival of the Mysteries. The walls were expanded at several points during the history of the sanctuary and effectively delineated the sanctuary and part of the deme itself with gates and towers. These walls stress the military function of the border site, but they also emphasize the secrecy of the Mysteries and rituals that occurred within the sanctuary. The Kallichoron well was located immediately outside the walls, immovable despite the various enlargements of the walls over time. This location, like the Telesterion itself, stresses the site specificity of the sanctuary and emphasizes the overall role of the well within the rituals of the Mysteries. This is likely the well where Demeter sat and mourned the loss of her daughter (*Hom. Hymn Dem.* 98–99), and it functioned as a place for dance at the end of the *pompe* (procession) from Athens to Eleusis during the festival.

For its entire history, the Telesterion was an unusual temple: it is non-peripteral, lacks lavish sculptural decoration in the form of metopes or pedimental figures, and is inward-facing, in contrast to the typically outward-looking peripteral temples common in Greek sanctuaries (Figure 13.2). Although the precise form of the earliest cult building remains speculative, it serves as the starting point from which some five cult buildings succeeded each other in the same location and persisted for over eight centuries. This venerable history attests to the continuing importance of the Mysteries and,

moreover, the continuing importance of Eleusis. With each successive Telesterion, the structure grew in size and capacity, an expansion that indicates the growing and continued popularity of the cult (Noack 1927: 48; Mylonas 1961: 77–78; Shear 1982: 128; Clinton 1994: 162).

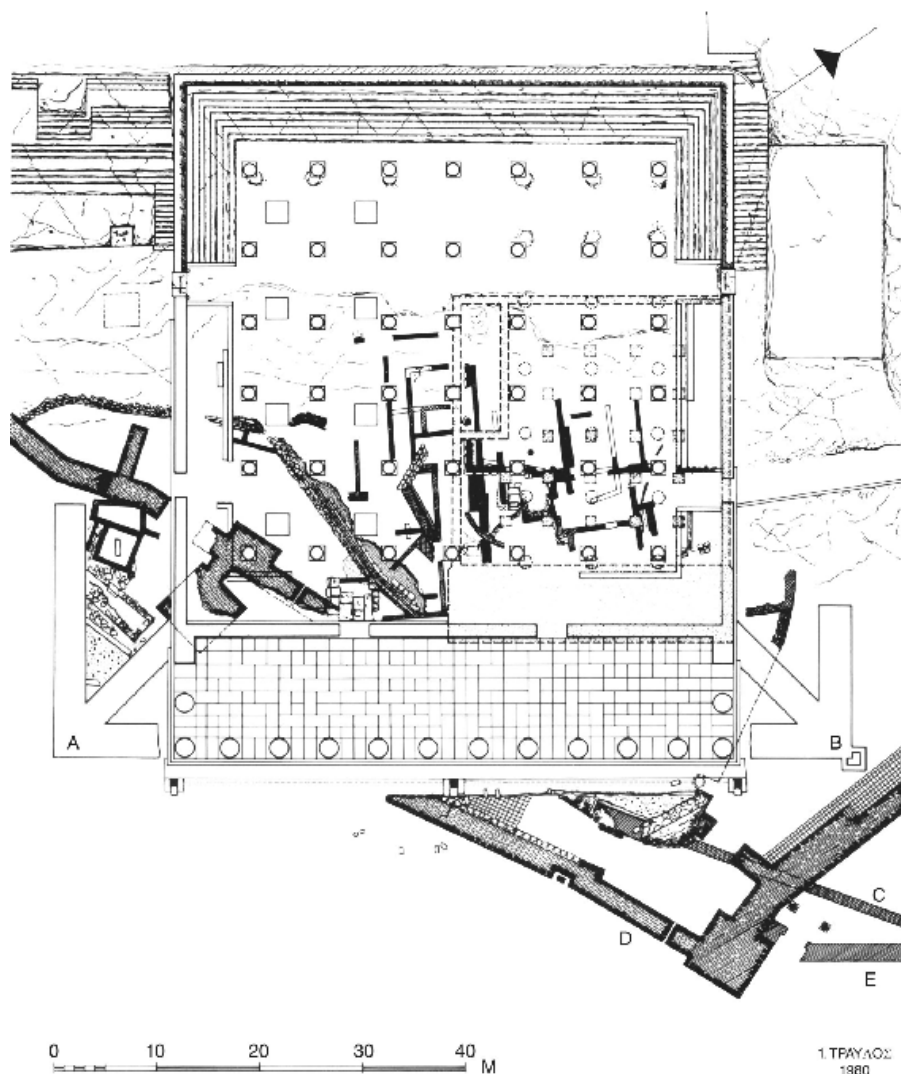


Figure 13.2 Eleusis, state plan of the Telesterion and surrounding area.

From Travlos 1988, fig. 172. © The Archaeological Society at Athens.

One crucial aspect of the Telesterion is the fact that it is partially cut into the bedrock of the site itself. This construction process, like the Kallichoron well, physically roots the sanctuary in the specific area of Eleusis, creating a tangible bond between site and ritual. The Mysteries cannot occur anywhere other than Eleusis and the Telesterion cannot be moved. Within the Telesterion, there is also an outcrop of bedrock that was preserved throughout

the successive rebuildings. This outcrop is contained within the structure often referred to as the “Anaktoron.” This structure is controversial: some scholars believe that it functioned as an interior room for the storage of the holy objects (*hiera*) and was thus a sort of “Holy of Holies” (Travlos 1950/1951: 1–16; Mylonas 1961: 83–87), while others argue that it was more of a platform and that the term “Anaktoron” should instead be applied to the building as a whole (Clinton 1992: 126–132). Regardless of its function, however, it further emphasizes the site specificity of the structure.

Cult activity of some form seems to have occurred at Eleusis since at least the Geometric period, and the site was inhabited throughout the Protogeometric and Geometric periods (Mylonas 1961: 55; Travlos 1960/1962). The earliest cult building that can be securely identified, however, dates from the end of the seventh century or early sixth century. In the early Archaic period, the terrace to the southeast of the acropolis was enlarged and provided with a new retaining wall. This terrace in turn served to support a monumental building, often referred to as the “Solonian Telesterion” (Noack 1927: 16–30; Mylonas 1961: 64–70). The construction of this building, with grey-blue Eleusinian limestone, may be an indication of an increasingly important political role for Eleusis within Attica, but it more likely represents the demands of the growing cult. As the cult of the Mysteries became more popular and spread not just throughout Attica but the Greek world as a whole, the sanctuary would have been forced to keep pace with this expansion. The monumental cult building, erected in the late seventh or early sixth century, reflects the increasing popularity of the Mysteries while simultaneously emphasizing the crucial role that the cult served in the religious life of its citizens.

The remains of the late Archaic Telesterion are preserved to a greater extent than the early sixth-century building. The south wall foundations, in addition to bedrock cuttings for the western wall, indicate a structure with nearly double the capacity of the early Archaic building: the new Telesterion measured 25.30×27.10 m, not including the porch, which would add an additional 4.55 m to the east–west length (resulting in the overall building dimensions of 27.10×29.85 m). The nearly square interior space of the building was supported by 22 columns arranged in five rows of five or four columns each, an early example of a hypostyle hall plan that would become characteristic of the Telesterion at Eleusis. The entire structure is likely to have been fronted by a porch of nine or ten Doric columns, perforated by one or three doors to permit access to the inner naos. The date for this building was initially placed in the third or early fourth quarter of the sixth century and it has thus long been considered “Peisistratid” (Noack 1927: 68–70, with contributions by Orlandos, 63–68). Recent investigations, however, reveal that it is better dated to the end of the sixth century, or circa 500 BCE (Clinton 1994: 162; Lippolis 2006: 163–164, 177–180; Miles 1988: 27–28; Paga 2015: 111–112).

At some point after the Persian destruction of Attica in 479 BCE – an activity that included Eleusis (Hdt. 9.65) – the Telesterion was rebuilt. There are traces of at least one, if not two, attempted rebuildings prior to the final construction in the later fifth century. The first phase is often referred to as the “Kimonian” Telesterion, but there is no evidence that this building was ever completed (Shear 1982, where the building is considered a pre-480 construction). There is then a possible second unfinished phase, often associated with Iktinos, the architect of the Parthenon. The “Kimonian” and “Iktinian” phases, though, could be a single phase; the chronology is complicated and there is little general consensus. Ultimately, the Telesterion was entirely rebuilt by Koroibos in the 440s–430s. Its completed form is, in essence, an enlargement of the late Archaic Telesterion: a square plan (approximately 52 × 54 m), hypostyle form (42 columns), and a colonnaded porch. The interior Anaktoron is preserved, and the enlarged size again reflects the increasing popularity of the cult, as well as the importance of the sanctuary to the polis of Athens. The successive rebuildings at Eleusis illustrate the status of the cult for the Athenian polis, making it one of the most prominent Panathenian Attic sanctuaries.

At the other end of the Attic peninsula, the site of Sounion also serves as a representation of a monumental Panathenian sanctuary ([Figure 13.3](#)). The sanctuary area of Sounion is located on two adjacent promontories, one dedicated to Poseidon and the other to Athena. Cult activity in the Poseidon sanctuary can be traced back to the second half of the seventh century, if not earlier (W.B. Dinsmoor, Jr. 1971: 2–4). The earliest monumental building activity, however, is the late Archaic poros Temple of Poseidon, built soon after 490 and destroyed by the Persians in 480/79, while still unfinished. It was rebuilt in the mid-fifth century in local Agrileza marble, and it is this incarnation that currently graces the windswept cape.



Figure 13.3 Sounion, view of the Temple of Poseidon.

Source: J. Paga.

The Archaic temple was the first monumental peripteral temple built outside the asty (13.06×30.20 m, 6×13 columns) and has an innovative plan for its time. The traces of the limestone foundations visible underneath the later marble temple demonstrate that the two temples had remarkably similar plans, dimensions, and proportions. Based on analogy with the marble temple (measuring 13.47×31.24 m), it is possible to reconstruct the limestone temple as a hexastyle peripteral temple with 13 columns along the flanks, and with a pronaos and opisthodomos with two columns in antis. The columns of the pronaos on the marble temple align with the third flank columns from the front, but it is not clear if this was also the case for the limestone temple. The long, rectangular cella of the marble temple was open and did not have a colonnade. The exposed foundations of the limestone temple, on the hand, indicate that the earlier temple was intended to have an internal colonnade, with perhaps as many as five columns per side. In most aspects, then, the two temples share a remarkable similarity and demonstrate the resources of the deme of Sounion and the overall importance of the sanctuary.

The Poseidon sanctuary at Sounion can be considered Panathenian because of the regular occurrence of a festival there, as well as the integral importance of the navy to Athenian affairs in the Classical period. Throughout the fifth century, the Athenian navy expanded and continued to grow in importance; this increased prominence was, at first, necessitated by continuous problems with Aigina. During much of the sixth century, the Aiginetans held the upper hand against the Athenians and frequently raided the Attic coastline (Hdt. 5.89). In the last decade of the sixth century, these problems came to a head

when the Thebans recruited the Aiginetans in their war against Athens. According to Herodotus (5.89–90), the Thebans attacked Attica from the west, while the Aiginetans ravaged the coastline, destroying the port at Phaleron and inflicting significant damage on the coastal demes. The Aiginetans continued to be a problem for the Athenians in the early fifth century. Herodotus recounts an episode where the Aiginetans seized several prominent Athenian men on a state vessel during a quadrennial festival at Sounion (Hdt. 6.87). Herodotus places this event close to the time when the Persian army advanced to Euboea and burned Eretria (Hdt. 6.101), so we can postulate that it took place between 499 and 490. By the first decade of the fifth century, then, the sanctuary at Sounion was the site of a quadrennial festival attended by important magistrates and Athenian citizens, it involved boats and it would be fitting that the Sanctuary of Poseidon be embellished with a monumental stone temple at the very time the Athenian navy was expanded. A deme calendar from Thorikos also includes a sacrifice to Poseidon at Sounion, indicating that demes in the vicinity of Sounion participated in ritual practices here on a regular basis (*SEG* 33.147; Lupu 2009 [*NGSL*²]: no. 1).

On the hill opposite the Poseidon sanctuary is a small Sanctuary of Athena Sounias. This is the home of the temple mentioned by Pausanias (1.1.1) and discussed by Vitruvius (*De arch.* 4.8.4). Although there is evidence that the Athena hill received votive dedications earlier, a stone temple was not built until the middle of the fifth century (Camp 2001: 307). The interior and exterior columns were of the Ionic order, an architectural choice that was somewhat unusual for Attica and Athens at this time. The form of the temple is also unusual, consisting of a relatively squat rectangular cella surrounded with a portico only on its east (10 columns) and south (12 columns) sides. Internally, the roof was supported by four columns, and a large base for the cult statue is preserved in the rear of the single room. The Athena sanctuary is smaller than the Poseidon sanctuary, but both are integrally connected to the topography of Sounion and both augmented the importance of this deme within Attica.

North of Sounion is the Sanctuary of Artemis at Brauron, located along the eastern coast of Attica, approximately 38 km from the asty. Although Brauron itself was not a deme, there are several settlements in the nearby vicinity (Philaidai, Steiria, Angele, and Myrrhinous, to name the closest ones). Regardless of its bureaucratic status, the Sanctuary of Artemis was an important cult center for Attica throughout the seventh century, if not earlier, and continued to function as such during the late Archaic and Classical periods. Not much is known about the state festival of the Brauronia, but it does seem clear that it played an important role in the cult calendar of Athens and is attested by Herodotus (6.138), as well as Philochoros (*FGH* 328 F 101), Aristophanes (*Peace*, 872–876), the *Athenaion Politeia* (54.7–8), a scholiast

to Theocritus (2.6), and Hesychius (s.v. Brauronios). The major festival occurred very four years, although it is possible than a smaller festival occurred annually. In addition, the Arkteia festival for young girls provided a rite of passage ritual within a liminal and rural setting, separated from the asty.

Despite material evidence dating from the Bronze Age, it was not until the sixth century that the site received notable attention in the form of monumental architecture (Figure 13.4). At the end of the sixth century, a retaining wall and terrace were constructed above the Sacred Spring in order to create a level area. The site's earliest identifiable temple is also dated to this period, circa 500 BCE, and the retaining wall, terrace, and temple all seem to belong to the same building project (Themelis 2002: 104). This construction is closely connected with the activity around the Sacred Spring, an indication that the spring itself was considered one of the most sacred areas within the sanctuary (Alavanou 1972: 17). The temple is only preserved in its foundations, which show a small Doric building (19.90×10.35 m), likely non-peripteral, with two columns in antis giving access to a narrow porch and four interior columns in the cella; the temple has also been restored by some with a small adyton at the rear and seems to have followed the same plan when it was rebuilt later in the fifth century (Papadimitriou 1963: 113; Themelis 2002: 104).

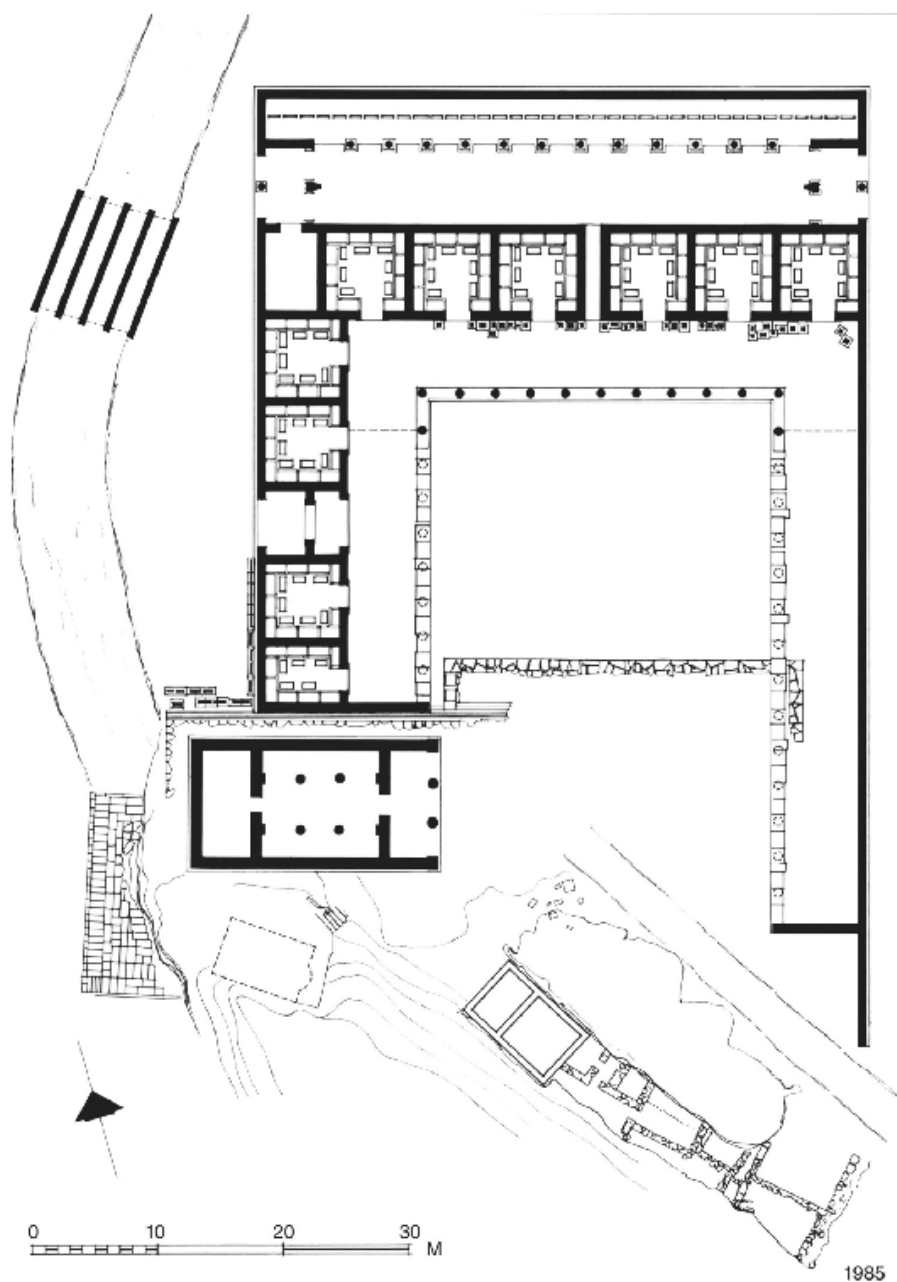


Figure 13.4 Brauron, plan of the sanctuary.

From Travlos 1988, fig. 58. © The Archaeological Society at Athens.

The sanctuary also included a stoa with rooms for dining and sleeping, built in the 420s, but never finished. The structure takes the form of a pi-shaped stoa with a wide intercolumniation, such that three metopes appear between each column, rather than the standard two. The stoa was also a principal area for the storage and display of votive objects, many of which were dedicated by

women from all areas of Attica (Camp 2001: 279). Other built structures within the sanctuary include a heroön or naiskos within a cave, often said to be the tomb of Iphigenia, and a stone bridge that crosses the nearby stream. Although these structures are relatively modest, they speak to the general importance of the sanctuary and its rituals for the broad territory of Attica: Brauron did not belong to a single deme but was an integral part of the polis itself. The presence of a Brauroneion on the Acropolis would have further elevated the place of the cult of Artemis Brauronia for the Athenians (Dobbins and Rhodes 1979).

The three examples of Eleusis, Sounion, and Brauron demonstrate the flexibility of sanctuary architecture and the sacred built environment within Attica, while simultaneously emphasizing the geographic and ritual extent of Panathenian cults. The variation within the built environment of these sites also underlines the flexibility of sanctuary architecture and draws attention to the overall multiplicity of structures, ornamentation, and function: the hypostyle hall of Eleusis, the peripteral monumental Temple of Poseidon, the Ionic Temple of Athena at Sounion, and the unfinished Doric stoa at Brauron all speak to variable needs within the Athenian population but also to the unifying nature of Greek cult practice.

Deme Sanctuaries

In contrast to these prominent Panathenian sanctuaries, we can consider the role of deme-specific sanctuaries, which are often – although not always – smaller and more locally based. Deme sanctuaries principally differ from Panathenian sanctuaries in that the target audience is typically the demesmen in the immediate vicinity, rather than the broader populace of Athens. In many ways, however, these deme sanctuaries function as the central religious spaces for their individual demes. As such, they can be considered both urban and extra-urban – urban for their surrounding populations and extra-urban for the asty (see de Polignac 1995 for the role of urban and extra-urban sanctuaries). These overlapping categories again highlight the flexibility of deme sanctuaries and the multiplicity of functions these areas served.

The deme of Rhamnous can be favorably compared to the three Panathenian cases studied in the previous section: it is located along both a coastal and terrestrial border and it helped to delineate Attic territory. Its geographic siting, however, made it more remote and isolated than Eleusis, Sounion, or Brauron: it lies in the northeast corner of Attica, approximately 53 km from the city center. The site is well situated, elevated above the coast and has a view north over the gulf to Euboea and south towards Marathon. These natural advantages led to the fortification of the deme in the Classical period, when it was used as a garrison (Pouilloux 1954: 23–92; Petrakos 1999: vol. 1,

51–184). In the late Archaic and early Classical periods, although the deme lacked walls, it still would have served as an important lookout spot for approaching enemies from the north. The geographical isolation of Rhamnous made the deme similar to an enclave like Ikaria, discussed later in this section, but it is possible that it had some association with the nearby Marathonian Tetrapolis, consisting of the demes of Marathon, Probalinthos, Oinoe, and Trikorynthos. If this were the case, Rhamnous would have shared some level of communication and extra-deme ties with the broader area of Northeast Attica (Ismard 2010: 239–251). Rhamnous, then, was both a singular border deme, remote and secluded, as well as a deme that possibly shared ties with an association with strong cultic bonds along the northeastern coast of Attica.

The deme was home to two important cults: those of Nemesis and Themis. Their joint sanctuary was located outside of the deme center, approximately 500 m to the south, and was approached via a long processional way lined with tombs and funerary monuments (Figure 13.5). Votive evidence from the area of the sanctuary indicates cult activity from the beginning of the sixth century, and there is also evidence of occupation during the Bronze Age (Petrakos 1983: 7). At some point in the first half of the sixth century, a small temple, likely to have been dedicated to Nemesis, was constructed, although the evidence for its reconstruction is limited (Petrakos 1982: 136; 1999: vol. 1, 192–193). At the close of the sixth century, another limestone temple was built, possibly as a replacement for the earlier structure, or possibly as an additional elaboration of the sanctuary (Petrakos 1999: vol. 1, 194). In the early fifth century, a small temple-like structure was erected on the southern part of the terrace. This building was small and non-peripteral, approximately 9.90×6.15 m, possibly with a distyle in antis façade (A.N. Dinsmoor 1972: 19; Petrakos 1983: 11; cf., Petrakos 1999: vol. 1, 199). The interior space was divided into a narrow pronaos and cella. The exterior wall faces were constructed in polygonal Lesbian masonry and the interior walls were formed with irregular courses of small stacked stones. The building has been dated to the first decades of the fifth century on the basis of its masonry and ceramics, although it is unclear if it should be placed prior to or after the Persian destruction (A.N. Dinsmoor 1972: 19; Petrakos 1999: vol. 1, 198–199). This structure has been postulated to be a temple of Themis or an *oikema* (treasury building), although there is no consensus (Temple to Themis: A.N. Dinsmoor 1972 (19–22), although she believes it is more likely an older temple to Nemesis, Miles 1989 (139), Goette 1993 (248), Camp 2001 (301); *oikema*: Petrakos 1983 (12) and 1999 (Vol. 1, 200–203).

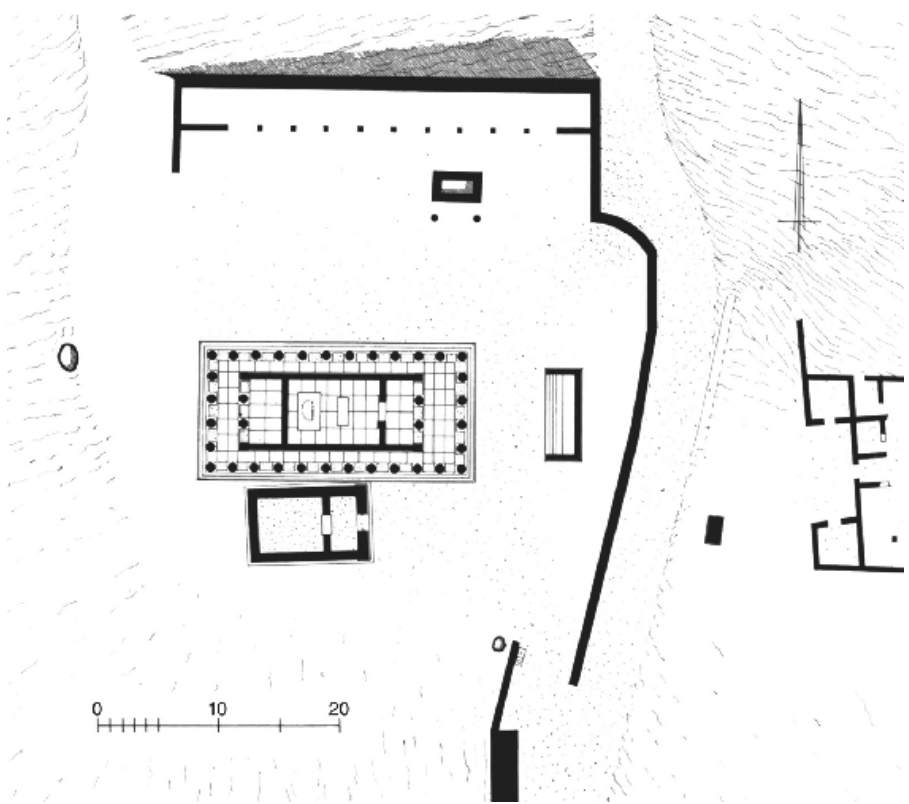


Figure 13.5 Rhamnous, plan of the Sanctuary of Themis and Nemesis.

From Petrakos 1999, fig. 105. © The Archaeological Society at Athens.

In the second half of the fifth century, the sanctuary terrace was expanded and a new monumental temple to Nemesis was constructed in circa 430–420 BCE (Miles 1989: 226–227). This temple contained the famous cult statue by Agorakritos, said to have been carved from a block of Parian stone originally brought to Attica by the Persians and deliberately repurposed by the Rhamnousians after the Athenian victories at Marathon and Salamis (Paus. 1.33). The temple itself was monumental, peripteral, and built of local marble (9.96×21.43 m, 6×12 columns). The Classical temples at Rhamnous and Sounion share many similarities, and it was once believed that they were designed by the same architect (W.B. Dinsmoor 1950: 181–182; cf., Miles 1989: 221–226). The Temple of Nemesis, however, was not the site of an annual Athenian-wide festival, and Nemesis herself seems to be more of a local deity connected to Rhamnous itself (Miles 1989: 138–139). The principal users of the sanctuary here, are the Rhamnousians themselves.

Nemesis is closely related to Themis, both mythologically and physically, in this sanctuary. The two temples are mere inches apart, and the south krepidoma of the Temple of Nemesis even takes the earlier and smaller temple into account (Miles 1989: 150–153). This arrangement speaks to an

element of site specificity at Rhamnous, similar to that seen at Eleusis. The cult activity here is deme-specific in multiple senses: the primary worshippers are those from Rhamnous and possibly other nearby demes, and the goddesses themselves are rooted to the land. It is important to emphasize, however, that although the sanctuary was not Panathenian in the same degree as Eleusis, Sounion, or Brauron; the Temple of Nemesis nevertheless received monumental treatment and functioned as an important landmark for this area, linking the demesmen of Rhamnous with the ultimate Athenian triumph over the Persians.

The small sanctuary on Cape Zoster makes for an illuminating comparison with Rhamnous. Here, on a promontory projecting from the southwestern coast of Attica, and near the demes of Aixone, Halai Aixonides, and Anagyrous, was the Temple of Apollo, Artemis, and Leto. There is some debate about which deme had oversight over the cult space: Strabo (9.1.21) lists Cape Zoster as the first Cape after Aixone and says that Halai Aixonides is the next deme down the coast from Aixone; Stephanus of Byzantium (s.v. Zoster) reports that the Halaeis worshipped Apollo Zoster, Artemis, and Leto there. In terms of geography, the overall remoteness of the Cape and limited access supports an association with Halai Aixonides, rather than Aixone (Eliot 1962: 25). Nevertheless, as an extra-urban sanctuary, the cult space was most likely frequented by demesmen from throughout the area, as well as sailors and merchants, who might dock at the nearby bays. Fundamentally, however, it remains a deme-specific, rather than a Panathenian, sanctuary.

The sanctuary on Cape Zoster was dedicated to the Delian triad of Apollo, Artemis, and Leto, as well as Athena (Paus. 1.31.1), and it was initially elaborated at the end of the sixth century and then expanded during the Classical period. The remains at the sanctuary include a small temple and a large altar (see Figure 15.4). The form of the temple is a simple cella with a single doorway for access, a narrow adyton in the back, and overall dimensions of 10.8×6.0 m; three bases for cult statues were found in the adyton. All of the bases carry inscriptions dated to the late sixth or early fifth century, and each reads: *Halies anethesan*, the Halaies dedicated [it] (Kourouniotes 1927/1928: 23–25). These bases, integrated with the paving slabs of the cella, indicate that the temple was in use by circa 500 BCE. The inscriptions also make it clear that the primary worshippers at the sanctuary were the residents of Halai Aixonides. One section of Cycladic polygonal masonry in the north wall of the temple has also been dated to the late sixth century (Kourouniotes 1927/1928: 16, 49–51). Although it is not certain that the temple in the sixth century assumed the same form as the Classical structure, the presence of the *in situ* statue bases and section of the north wall indicate that the form of the earlier temple would have been remarkably similar. The temple is oriented east–west, and the altar is in line with the entrance to the cella. A peristyle of 4×6 monolithic, unfluted columns was

added in the second half of the fourth century, each column standing on its own base, rather than a continuous stylobate (Kourouniotes 1927/1928: 30–31). Before the columns were added, the temple had the appearance of a small naiskos, or shrine, similar to the Temple of Themis at Rhamnous or the Temple of Pythian Apollo at Ikaria. The added columns increased the overall monumental quality of the temple and put it more on par with the peripteral temples of Nemesis at Rhamnous and Poseidon at Sounion, despite its continued small size.

The sanctuary at Zoster does not appear to have had any Panathenian rituals associated with it: the focus of worship is the immediate locale and the nearby inhabitants. Despite its small size and relative isolation, however, it is possible to understand the sanctuary's function within the broader framework of Attic cult activity and sacred spaces. Like Eleusis, Rhamnous, Brauron, and Sounion, the sanctuary at Zoster is located along a border area, serving to delimit the territory of Attica. The cult also has connections to sailing and maritime activities, which were of utmost importance to the Athenians in the Classical period. Moreover, the links between the Delian Triad worshipped at Zoster and the Athenian expropriation of Delos in the mid-fifth century may indicate that this small, local sanctuary increased in prominence and significance in the wake of Athenian involvement in the Delian League. At Zoster, then, it is possible to detect both the local import of the sanctuary and cult, as well as its integration into the Panathenian ritual-architectural matrix.

In contrast to the five sites already discussed, the deme of Ikaria is a small, inland enclave, located just north of Mt. Pentelikon. It belongs to the inland trittys of phyle II, Aigeis but is separated from almost all of the other members of the trittys by the mountain. The coastal trittys of Aigeis, however, is contiguous with the inland trittys, so the demesmen of Ikaria would have been close to other members of the phyle, such as those from Probalinthos and Phegiaia, and we might imagine that these nearby demes participated in some of the rituals and activities at Ikaria, particularly the Rural Dionysia (Paga 2010: 354, 377–378). Ikaria also served an important mythological function for Athens: it is the place where Dionysos first appeared in Attica and where he, with notorious results, introduced the art of viticulture to the eponymous Ikarios (Hyg. *Poet. astr.* 2.4, *Fab.* 130; Eratosth. *Epigone* fr. 22–27 Powell; Apollod. *Bibl. Epit.* 2.14; Arist. fr. 515 Rose; Ael. *NA* 7.28).

The deme had two important cults, to Dionysos and to Pythian Apollo, both of which provide evidence for settlement and occupation of the area from the late Archaic period at the latest (Figure 13.6). The cult of Apollo is firmly established on an epigraphic basis by the fourth-century inscription carved into the threshold block of Building H, which identifies the structure as the temple to Pythian Apollo (*IG* II² 4976; Biers and Boyd 1982: 15). An earlier inscription attests to the functioning of this cult by the last quarter of the sixth century (*IG* I³ 1015), and it is possible that the fourth century Pytheion

provided by the discovery of several fragments of a seated image of the god, bearded, wearing a chiton and himation, and holding a kantharos in his right hand (Romano 1982; Despinis 2007). The statue is dated to the late Archaic period, circa 530–520 BCE, and, like *IG I³ 1015*, was carved from Pentelic marble. The structure which housed the cult of Dionysos may be Building D, although his temple has not been identified with certainty. The general proximity of the theatral area may be taken as additional support for locating the Temple of Dionysos somewhere in the immediate vicinity.

The three cases of Rhamnous, Cape Zoster, and Ikaria demonstrate that the flexibility seen in the Panathenian sanctuaries extends to the deme-specific ones as well. All of the Attic sanctuaries have variable sizes, include a range of structures, and were used by a diversity of people. Ultimately, some sanctuaries were more connected to the *asty* and activities of the polis than others, but all served integral functions in ritual activity for Athenians throughout the broad territory of Attica. These deme sanctuaries, both Panathenian and deme-specific, illustrate the concept of polis-religion and provide a framework for considering architectural dialogues outside of the main urban center (for polis religion, see Sourvinou-Inwood 1990).

Conclusions

In total, there are 139 Attic demes and the majority are located outside of the *asty*, in the countryside, mountainous areas, and coastal regions. We must imagine that each of these demes had its own sacred areas, with or without monumental definition, with or without large-scale annual festivals, but all fulfilling the basic need of providing a space to worship the gods. The sites discussed in this chapter merely represent six examples of the variability and flexibility of these extra-urban sanctuaries. Although it is possible to indicate distinctions in use – broad Panathenian participation and patronage versus local or restricted operation – these sanctuaries nevertheless represent a constant and visible presence in Attic topography. The overall size and elaboration of the sanctuaries depended on the demes' own sizes and resources, although it may be possible to detect state financing or support in the Panathenian sanctuaries, such as Eleusis. The lack of state support, however, did not necessitate a non-monumental sanctuary: the Sanctuary of Nemesis and Themis at Rhamnous is just one example of a local deme-specific sanctuary with large-scale sacred structures. Further examination into deme finances and possible levels of polis support represents one avenue for future research that has the potential to shed light on how these deme sanctuaries functioned and how they were (or were not) linked to the *asty*.

Both the Panathenian and locally focused sanctuaries functioned primarily as sites of sacrifice and worship; these were places where the community could

come together to thank the gods or ask for divine favor. Yet, just as large-scale festivals like the Panathenaia can be seen to foster, reaffirm, and challenge notions of civic and religious identity (Maurizio 1998), so too do the deme sanctuaries represent places where local identities, both civic and religious, could be formed and maintained. These sanctuaries were not merely static areas of religious devotion but instead dynamic spaces of action and interaction. The role of the phratries, *genoi*, and local associations like the Marathonian Tetrapolis and the Genoi of the Salaminioi provide even more avenues for considering the multiplicity of identities within these extra-urban spaces. In many ways, these sanctuaries functioned as loci of communication and facilitated the spread of information outside the asty and throughout the territory of Attica (cf., Ober 2008: 135–141).

Ultimately, these case studies demonstrate how visible the topography of Attica became during the Classical period. The geographic and political extent of Athenian power was, in many ways, made manifest by these extra-urban sanctuaries, particularly those along the terrestrial and sea borders. The deme sanctuaries illustrate the vibrancy of the demes in the Archaic and Classical period: their resources, their site specificity, their connections with local communities, neighboring areas, and the polis at large. Although the Acropolis may always stand as the pinnacle of Athenian sacred building activity, the deme sanctuaries provide a glimpse into the possibilities of studying Athenian architecture and sacred space outside of the asty. Attic sanctuaries are flexible, multifarious, independent, and interconnected, and they fundamentally enrich our understanding of the role of the built environment in Classical Athens.

FURTHER READING

There are no comprehensive overviews of Attic sanctuaries, but general guides to Attica and individual site reports constitute the bulk of available information. Good starting points remain Camp 2001 and Goette 2001, as well as Travlos 1988. All three publications provide specialized site bibliographies and numerous plans and images. More attention has recently turned to studies of Athenian associations, especially Ismard 2010 and Jones 1999 and 2004. The general area of Attica has received more attention than sanctuaries in particular, and the work of Osborne (1985) and Whitehead (1986) remain fundamental. The general diversity of Attica and large extent of its territory has led to some more specialized studies, such as the work of Munn in the northwest region of Attica (1993), recently investigated anew by Fachard, *The Border Demes of Attica: Settlement Patterns and Economy* (www.bordersofattica.org). Although attention to Attica flourished in the mid-twentieth century, it has only recently reappeared in the spotlight. Work by

Kellogg (2007), Paga (2010), Taylor (2011), and Bultrighini (2014) stands as a new wave of investigation and renewed interest in the areas outside of the asty. For Athenian religion and the individual components of sanctuary space, see Burkert 1985 and, more recently, Parker 2005.

REFERENCES

- Alavanou, A. 1972. *Brauron and Halai Araphenides*, Athens.
- Biers, W.R. and T.D. Boyd. 1982. "Ikarion in Attica: 1888–1981." *Hesperia* 51: 1–18.
- Bodel, J. and N. Dimitrova, eds. 2014. *Ancient Documents and their Contexts: First North American Congress of Greek and Latin Epigraphy*. Leiden and Boston.
- Boedeker, D. and K.A. Raafaub, eds. 1998. *Democracy, Empire, and the Arts in Fifth-century Athens*. Cambridge, MA.
- Bultrighini, I. 2014. "From Coast to Coast: epigraphic evidence for cult and religion in coastal demes of Attica." In Bodel and Dimitrova, eds.
- Burkert, W. 1985. *Greek Religion*. Cambridge, MA.
- Camp, J.M. 2001. *The Archaeology of Athens*. New Haven.
- Clinton, K. 1992. *Myth and Cult: The Iconography of the Eleusinian Mysteries*. Göteborg. Clinton, K. 1994. "The Eleusinian Mysteries and Panhellenism in Democratic Athens." In Coulson, Palagia, and Shear *et al.*, eds, 161–172.
- Coulson, W.D.E., O. Palagia, T.L. Shear *et al.*, eds. 1994. *The Archaeology of Athens and Attica under the Democracy*. Oxford.
- de Polignac, F. 1995. *Cults, Territory and the Origins of the Greek City-State*. Trans. J. Lloyd. Chicago.
- Despinis, G. 2007. "Neues zu der spätarchaische Statue des Dionysos aus Ikaria." *MDAI(A)*122: 103–137.
- Dinsmoor, A.N. 1972. *Rhamnous*. Athens.
- Dinsmoor, W.B. 1950. *Architecture of Ancient Greece: An Account of Historic Development*. 3rd ed. New York.
- Dinsmoor, W.B., Jr. 1971. *Sounion*. Athens.
- Dobbins, J.J. and R.F. Rhodes. 1979. "The Sanctuary of Artemis

Brauronia on the Athenian Acropolis.” *Hesperia* 48: 325–341.

Eliot, C.W.J. 1962. *Coastal Demes of Attika: A Study of the Policy of Kleisthenes*. Phoenix Supplement 5. Toronto.

Fachard, S. *The Border Demes of Attica: Settlement Patterns and Economy*. www.bordersofattica.org (accessed November 20, 2015).

Gentili, B. and F. Perusino, eds. 2002. *Le orse di Brauron*. Pisa.

Goette, H.R. 1993. *Athen-Attika-Megaris: Reiseführer zu den Kunstschatzen und Kulturdenkmälern im Zentrum Griechenlands*. Berlin.

Goette, H.R. 2001. *Athens, Attica and the Megarid: An Archaeological Guide*. London.

Graf, F. 1996. “*Pompai in Greece: Some Considerations about Space and Ritual and the Greek Polis*.” In Hägg, ed., 55–65.

Hägg, R., ed. 1996. *The Role of Religion in the Early Greek Polis*. Stockholm.

Hendrickson, K.E. and N.C.J. Pappas, eds. 2007. *Interpreting the Past: Essays from the 4th International Conference on European History*. Athens.

Holleran, C. and A. Pudsey, eds. 2011. *Demography and the Graeco-Roman World*. Cambridge.

Hopper, R.J. 1961. “‘Plain,’ ‘Shore,’ and ‘Hill’ in Early Athens.” *ABSA* 56: 189–219.

Ismard, P. 2010. *La Cité des réseaux: Athènes et ses associations VI^e–I^e siècle av. J.-C.* Paris.

Jones, N.F. 1999. *The Associations of Classical Athens: the Response to Democracy*. Oxford.

Jones, N.F. 2004. *Rural Athens Under the Democracy*. Philadelphia.

Kellogg, D. 2007. “*Local Identities in Classical Athens*.” In Hendrickson and Pappas, eds., 63–74.

Kourouniotes, K. 1927/1928. “Τὸ Ἱερὸν τοῦ Ἀπόλλωνος τοῦ Ζωστήρος.” *Archaiologikon Deltion* 11: 9–53.

Lippolis, E. 2006. *Mysteria: archeologia e culto del santuario di Demetra a Eleusi*. Milan.

Lupu, E. 2009. *Greek Sacred Law: A Collection of New Documents*

(NGSL²). 2nd ed. Leiden.

Maurizio, L. 1998. "The Panathenaic Procession: Athens' Participatory Democracy on Display?" In Boedeker and Raafaub, eds., 297–317.

Miles, M.M. 1998. *The Athenian Agora XXXI: The City Eleusinion*. Princeton.

Miles, M.M., ed. 2015. *Autopsy in Athens: Recent Archaeological Research on Athens and Attica*. Oxford.

Miles, M.M. 1989. "A Reconstruction of the Temple of Nemesis at Rhamnous." *Hesperia* 58: 133–249.

Munn, M. 1993. *The Defense of Attica: The Dema Wall and the Boiotian War of 378–375 B.C.* Berkeley.

Murray, O. and S. Price, eds. 1990. *The Greek City from Homer to Alexander*. Oxford.

Mylonas, G.E. 1961. *Eleusis and the Eleusinian Mysteries*. Princeton.

Noack, F. 1927. *Eleusis: Die Baugeschichtliche Entwicklung des Heiligtums*. Berlin.

Ober, J. 2008. *Democracy and Knowledge: Innovation and Learning in Classical Athens*. Princeton.

Osborne, R. 1985. *Demos: The Discovery of Classical Attika*. Cambridge.

Paga, J. 2010. "Deme Theaters in Attica and the Trittys System." *Hesperia* 79: 351–384.

Paga, J. 2015. "The Monumental Definition of Attica in the Early Democratic Period." In Miles, M.M., ed., 108–125.

Papadimitriou, J. 1963. "The Sanctuary of Artemis at Brauron." *Scientific American*, 208 (6): 110–120.

Parker, R. 2005. *Polytheism and Society at Athens*. Oxford.

Petrakos, B. 1982. "Ἀνασκαφὴ Παμνοῦντος." *Prakt*, 127–162.

Petrakos, B. 1983. *Rhamnous*. Athens.

Petrakos, B. 1999. *Ο δῆμος του Παμνούντος*. 2 vols. Athens.

Pouilloux, J. 1954. *La Forteresse de Rhamnonte: Etude de topographie et d'histoire*. Paris.

Romano, I. 1982. "The Archaic Statue of Dionysos from Ikarion." *Hesperia*, 51: 398–409.

Shear, T.L., Jr. 1982. "The Demolished Temple at Eleusis." In *Studies in Athenian Architecture, Sculpture, and Topography Presented to Homer A. Thompson*. *Hesperia*, Suppl. 20: 128–140.

Sourvinou-Inwood, C. 1990. "What is Polis Religion?" In Murray and Price, eds., 295–322.

Taylor, C. 2011. "Migration and the demes of Attica." In Holleran and Pudsey, eds., 117–134.

Themelis, P.G. 2002. "Contribution to the Topography of the Sanctuary at Brauron." In Gentili and Perusino, eds., 103–116.

Traill, J.S. 1975. *The Political Organization of Attica*. *Hesperia*, Suppl. 14.

Travlos, J. 1950/1951. "Τὸ Ἀνάκτορον τῆς Ἐλευσίνος," *Archaiologike Ephemeris*, 1–16.

Travlos, J. 1960/1962. "Ἐλευσις," *Archaiologikon Deltion*, 16: 43–60.

Travlos, J. 1988. *Bildlexicon zur Topographie des antiken Attika*. Tübingen.

Whitehead, D. 1986. *The Demes of Attica, 508/7–ca. 250 B.C.* Princeton.

CHAPTER 14

Inscribing Construction: The Financing and Administration of Public Building in Greek Sanctuaries

Robert K. Pitt

Introduction

The modern visitor to the New Acropolis Museum in Athens can share with their ancient counterparts the experience of viewing the sculptures and architectural members from the Periclean program in close proximity to the inscribed marble *stelai* that tell the story of their design and construction. Today, the Periclean monuments stand isolated atop the Acropolis, but the many hundreds of cuttings in the bedrock surrounding them remind us that in antiquity they were framed by a confused forest of inscribed standing stones informing passersby of battles won, statues dedicated, and of building accounts rendered.

Architectural inscriptions, often fragmentary and weather-beaten, are not as immediately intelligible as the structures they describe, but the information contained within them provides a wealth of data about the architects and masons who built the Erechtheion, the committees administering building in the Athena Nike sanctuary, and the year by year accounts procuring wood, metals, wagons and marble for the Parthenon and Propylaia.

The placing of building inscriptions within sight of the construction reminds us that much of the administrative documentation from these projects was meant to be seen, and indeed read, allowing the ancient visitor to scrutinize the lavish expense or simply to note the procedural cogs at work in the democratic machine. The epigraphic category of “building inscriptions” covers a wide variety of monumentalized texts from ancient construction projects and includes: laws and general regulations; decrees setting up committees of officials and architects to administer projects; architectural, procedural, and legal specifications inscribed either to advertise the available work to builders or as records of contracts signed between the state and the entrepreneur; financial accounts of the progressing works; records of penalties for unsatisfactory workmanship or failures to abide by the written specifications; legal prosecutions for defaulting or fraudulent builders; mason’s marks on blocks to help identify ownership or position of a block;

and dedicatory inscriptions set up to mark the completion of a project or to honor a donor.

No single ancient building project has bequeathed to us all of these categories, whether owing to the accident of survival or a varying epigraphic habit of which documents should be inscribed from the administration's archives. Because of this patchwork of evidence, the following reconstruction of the administrative life of a building project will necessarily present an illusion of conformity where in fact there was undoubtedly variation over time and between projects.

Building by Committee

The reasons why a state or sanctuary decided to build a temple, stoa, or treasury are occasionally preserved in ancient literary sources, whether in commemoration of success in battle, a financial windfall, or in thanks to a god for warding off disaster. Inscribed decrees inaugurating a building project, however, rarely comment on why the construction was commissioned, and we are more often left to speculate on the likely historical events that gave rise to a project. Such documents are part of the democratic process of accountability, showing how a board of magistrates was set up, to whom they were responsible, and from where the money was to come. As large public building projects were relatively rare in the life of a polis, special boards were often created by the assembly or council to oversee the work and report on progress and finances, often as groups of *epistatai* "overseers" or *naopoioi* "temple builders." In Classical Athens, the Council had responsibility for public building works, but much of their remit was limited to creating sub-boards and auditing their accounts.

One (in)famous inscription from the late fifth century inaugurates various building works in the Sanctuary of Athena Nike, including the construction of a temple (*IG I³ 35*, [Figure 14.1](#)). The date of the decree and its relation to the known Temple of Athena Nike on the Acropolis is much contested; nevertheless the inscription offers a rare glimpse into the processes of fifth-century Athenian building policy:

[-- For Athena Nike a priestess to be [allotted] from all Athenian women, and the sanctuary furnished with doors as Kallikrates shall specify. The poletai shall let out the contract in the prytany of Leontis. The priestess shall receive fifty drachmas and the legs and hides from the public sacrifices. A temple shall be constructed as Kallikrates shall specify and a stone altar. Hestaios proposed: three men shall be elected from the Council; and having made the specifications with Kallikrates, they shall [---] according to [the contracts?].

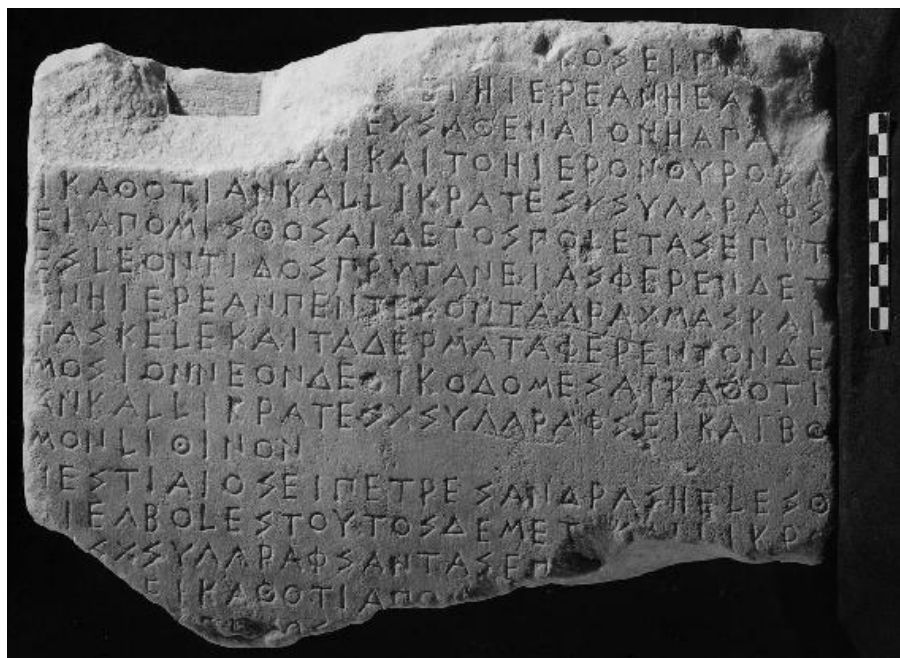


Figure 14.1 Temple of Athena Nike (IG I³ 35). Courtesy of The Center for Epigraphical and Palaeographical Studies, Ohio State University, Donald Laing collection.

The decree orders the democratic selection of a new priesthood for Athena Nike and orders the bidding for work on a set of architectural specifications (syngraphai) by an appointed architect (the well-known Kallikrates) for a set of doors giving the sanctuary a monumental boundary, and only later is a temple to be built. An amendment then carries the proposals further by creating a subgroup of three men from the Council who will work with the architect on drawing up the specifications. The inauguration of the Nike project and commission is relatively simple, but there are not regular procedures in place at this period for such activities: Kallikrates may have been voted as the architect, or perhaps was simply the architect the state approached for public works at the time, but there was clearly a doubt in Hestaios' mind about giving him sole responsibility for the drawing up and selling the contract rights for work on the specifications, and it was thought wise to set up a subcommittee from the Council for a more accountable set of procedures. In later Classical and Hellenistic building inscriptions, such organization of construction works is invariably undertaken by a standing committee working with an architect and with a number of other boards of magistrates or specialists in a defined hierarchy of responsibilities.

Athenian legislation and procedures for public building work evolved apace

throughout the Classical period and into the Hellenistic, no doubt initially as a result of long exposure to a variety of contractual difficulties during the heyday of the Periclean program. Several Athenian building contracts or *syngraphai* (specifications) survive, but one particularly illuminating document for administrative procedure is a late Classical or Hellenistic law concerning repairs in the Sanctuary of Artemis at Brauron:

Gods. --les, son of Hierokles, of Philaidai proposed: in order that everything in the sanctuary [of the] Brauronian [goddess] may be secure and sound, and the temple, both [the ancient one (*archaios*)?] and the Parthenon, and the houses (*oikoi*) may be roofed, and the Amphipoleion in which [the bears (*arktoi*)] reside and the upper storey (*hyperoia*) above the Amphipoleion, and the gymnasium and the palaistra and the stables (*hippones*), and everything else which the city built and dedicated to the goddess for the preservation of the Athenian people. Good Fortune. Be it resolved by the lawgivers (*nomothetai*), that the *exetastai* from the Council and the treasurers of the Other Gods, having inspected all these things accurately, the number of the doors and of the tables and of everything else, so that it is fit for the goddess, are to hand (the report) over to the epistatai and write them up on the same stele on which the other dedications are recorded, and so that such repairs as are needed in the sanctuary are carried out, the architect elected for the sanctuaries shall go to the sanctuary, whenever the epistatai order him, and firstly to take care of the statue, whatever is needed, next examining whatever has need of repair in the sanctuary, and having compiled the specifications he will hand them over to the poletai, and the poletai will let a contract for them in the Council according to the law, and the apodektai are to allocate to the contractors for the works the money from the revenue of Artemis, apportioning out [---], but if the epi[statai] do not order the architect [---].

(SEG 52.104)

The Athenians had numerous permanent boards and officials, and here the law orders a number of them to work together, ordering the cogs in the machine of government and setting them in motion on a particular task rather than setting up any ad hoc or new committees. Being a law and not a decree, the action is to happen regularly, negating any need for further legislation to take care of the sanctuary buildings.

For large construction projects, dedicated committees were often established for either specific or general building works within a sanctuary. One board we have a lot of evidence for is that of the *naopoioi* of the Boeotian Confederacy, who were charged in perhaps the 220s BCE with construction of a temple to Zeus Basileus at Lebadeia. They undertook themselves almost all the administrative, legal, and financial roles mentioned in the Brauron law, and their list of duties suggests they worked on-site continuously during the

temple project: they drafted contracts and put them out to tender; extracted fines from contractors and guarantors; assessed the quality of workmanship and removed inadequate masons; checked measurements and rules; inspected building materials, such as the weight of metal clamps and dowels and the variety of olive oil and *miltos* used to test levelled surfaces; and had wide-ranging powers to assess on-the-spot fines for infractions of the contract specifications (Pitt 2014). Nevertheless, they also worked in collaboration with other groups, albeit infrequently, such as the Boeotian archons and other financial officials who assisted with certain financial penalties, while their chief collaboration was with the architect and subarchitect in checking the working and setting of the thousands of stone blocks transported into the sanctuary.

Syngraphai

The system of letting out contracts to private builders was certainly already in operation in Athens during the fifth century, but the building accounts predominantly indicate that workers were paid a daily wage or piecemeal. Few cities either could afford to employ a fulltime building workforce or would have had enough large-scale projects to occupy their labor, and so the public building contract emerged as a convenient method of franchising out construction to skilled entrepreneurs – the equivalent of the modern public–private partnership. This situation of limited opportunities at home and the draw of large building projects abroad gave rise to the travelling entrepreneur, many hundreds of whom can be traced moving across the Greek world in the building accounts of the great sanctuaries.

It suited the polis to split up the architectural specifications for a building into much smaller bite-sized chunks to be sold to contractors. This breaking up of the work spread out the risk to the state of one contractor defaulting, and it was perhaps also more attractive to contractors. Several surviving stipulations by building committees limit the number of contracts a man could hold at any one time, limiting the damage to the project as a whole that one rotten apple could effect, and ensuring that the contractor concentrated on the job in hand, as illustrated in an inscription from Tegea:

If anyone has contracts for more than two pieces of work, either sacred or public, in any way, to whom the *haliastai* have not given express and unanimous permission, he is to be penalized 50 drachmas a month for each work over two until he completes those supernumerary contracts

(IG V ii 6.25–31; Rhodes and Osborne 2003: no. 60)

The migratory nature of many such contractors created a potential problem to the state: it meant they had few if any links to the place in which they were

contracting, and so no property or political rights that could be confiscated or removed on default of the contract. The difficulty therefore arose of how to pin down such men to the letter of their contract and to obey the rules and laws of the project and city. The solution lay in large part in the appointment of guarantors by the contractor, sureties whose role was to pay any fines that the commission could not extract from the contractor, and who were even liable to certain penalties themselves if the work was not proceeding to plan. An additional bonus for the commission was that these guarantors would act as further inspectors of the works out of a desire to keep themselves out of the courts. The potential losses were enormous, and many of the guarantors traceable in building inscriptions were indeed wealthy men. That wealth was assessed in advance of the contract being let, and we might wonder why anyone would take on such a precarious position in a field as notoriously crooked as the building trade; it was perhaps in some sense a form of liturgy, a semiofficial act of public spirit.

An Athenian contract for work on the island of Delos is more specific on the appointment of guarantors (*IG* II² 1678.17–18), stating that each surety had to be worthy of a debt of 1000 drachmas and that the contractor had to supply enough guarantors until the total cost of his contract was met, in this case probably seven individuals. Such a system offered a number of advantages: it increased the likelihood that the state could recover monies, as there were more men to extract fines from; and the guarantors, for their part, could be more disposed towards assuming positions as sureties if they acted as part of a group, limiting their individual losses. As well as wealth, the primary qualification for a guarantor appears to have been citizenship; while the contractor could be foreign and so have few ties to the place in which he found work, the guarantors in the building contracts are almost always local and provided the nail with which to pin down the builder to his contract.

At Lebedeia, if a contract were to be suspended for a period and later resold, perhaps as a result of war or financing problems, the original guarantors were still liable for the initial work:

Let the original guarantors and contractor not be released from the contract until the one buying the resold (sections) establishes worthy guarantors; regarding the work already completed, let the original guarantors stand until the final examination

(*IG* VII 3073.24–29).

The first contractor may be long gone, but this passing of the baton from one set of guarantors to the next ensured that even under extreme circumstances the sanctuary was at no point unable to recover funds it had released.

Throughout the fourth and third centuries, contracts became increasing verbose in order to tackle every conceivable form of corruption and mismanagement and to ensure that the architect's plans were carried out as

accurately as possible. In general, our earliest inscribed contracts were created by appending the record of sale (who undertook to do what for how much money) to the advertised architectural specifications, such as in this example from Oropos:

He will take up the work by the four-foot length and will deliver it completed in twenty days from when he receives the money. He contracted for the four foot length: 6 drachmas. The contractor is Phrynos residing in Alopeke; the guarantor is Telesias son of Tellias of Euonymon.

(*IOropos* 292.33–37)

By the Hellenistic period, the procedural and legal clauses were often embedded within the architectural specifications in much more complicated arrangements, dealing with the order in which the work was to proceed, the duties and responsibilities of the building commission and architects checking each level of masonry, which officials were to assess the quality of the work, the qualifications of the laborers the contractor hired, the powers of officials to issue penalties, and the payment schedules to the contractors.

Before a contract could be sold, the commission advertised the specifications in order to attract potential bidders, sometimes sending out heralds to foreign cities, as we can see in the Tholos accounts from Epidauros, where agents are given travel expenses for some aspect of letting or advertising contracts at Corinth and Argos (*IG* IV² 1, 103 A 3–4). An auction was typically overseen by the commission in charge of the work, but in Athens a special body of sellers called the *poletai* worked with the Council to sell public contracts, probably with their herald as auctioneer. Builders calculated for how little money they could undertake the work on the basis of the advertised specifications, and the lowest bid would win. An open auction produced a fair price for both commission and builder, but the process was vulnerable to corruption, such as cartel formation, where builders would band together to make deals not to outbid each other, increasing the costs of the project to their own profit. Legislation against such practices survives from fourth-century BCE Tegea, where severe penalties were laid down for those found guilty of such crimes:

But if anyone gets together to oppose the allocation of the contracts, or does harm by destroying the work in any way, those who issue the contracts are to punish him with whatever punishment they think fit, and let him be summoned to judgment and brought into whatever court is appropriate for the magnitude of the penalty

(*IG* V ii 6.15–21; Rhodes and Osborne 2003: no. 60).

The contract was only considered complete – signed and sealed – after the builder's guarantors had been assessed, presumably for their wealth and political status, and it is telling that at this point the state often released

preliminary funds for the works, as a down payment.

Works in Progress

The first task of the newly appointed contractor was to acquire the materials and skilled workers needed for the task ahead. In some cases there could be serious obstacles to overcome, especially if the contract included provision and transportation of stone to the building site. An initial down payment from the project treasury could help the contractor to purchase such materials, but the commission might also offer him various forms of tax exemption to help ease the movement of supplies through the territory of the polis or sanctuary. One document from Delos offers the contractor and his workers guaranteed security and tax exemptions from any imports to the island for the duration of the project as well as for 30 days afterwards, perhaps an added incentive enabling him to make a little extra cash bringing in other commodities with the building materials (*IDélos* 502 A17–19). Freedom from certain public responsibilities was also offered to those taking up contractual work. For example, in Athens, during the restoring of the Long Walls from 307/6 BCE, anyone involved with the project was made exempt from military call-up: “There shall also be immunity from military service for those contracting for the work about the walls for four years,” ensuring that builders were not called away and this important project disrupted (Woodhead 1997: no. 109.116–117).

The quality of materials brought to the site and used during construction was closely monitored by officials to prevent the contractor saving money by using inferior supplies, and, in doing so, potentially causing structural problems to the building. One particular emphasis was on the composition and weight of any metal items in the specifications, especially clamps, dowels and the lead used to seal them into position. A number of recently discovered iron clamps and dowels from the walls of the Athenian Propylaia bear the etched inscription ΑΘΕ (for Ath[ena]?), the result perhaps of an official approving their quality (*SEG* 55.86). Such checking of metal building materials can be seen at Eleusis in a fourth-century BCE contract for the making of bolts fixed between the column drums of the Telestereion porch. Such bolts (*empolia*) are more often in wood (several survive from the Parthenon), but here, at great expense, they are to be in bronze, and of a very strict metallurgical ratio: “he shall make them of bronze from Marion (in Cyprus), mixed by the twelfth, eleven parts copper and the twelfth part of tin” (*IG* II² 1675.17–20). They are then checked on the basis of their weight: “he will contract by the *mina* and shall weigh them in the constant presence of one of the epistatai or to the public slave or to the architect” (*IG* II² 1675.26–29). It was perhaps during such checking procedures that the Propylaia clamps were inscribed with an

official mark to validate their suitability. The necessary detail involved in such metalwork, and the disastrous consequences to the structure if it is not adhered to, explains why commissions were often unwilling to leave the supply of bolts and clamps to the stone contractors, preferring instead to contract that portion of the work to specialists working to detailed instructions.

One lengthy section from a Lebadeia temple dossier serves as an example of the constant checking of materials and work on a construction project, and the necessity for the contractor to adhere very strictly to the architectural and procedural specifications laid down in his contract:

And he will use for all the rules pure olive oil and Sinopian miltos; if he does not use Sinopian miltos or pure olive oil, he will be fined by the Naopoioi and the Boeotarchs, and no block will be closed tight by him until he exhibits to the Naopoioi that he is using approved Sinopian miltos and pure olive oil. And he will exhibit the work and the setting to the architect, and to the subarchitect the joints of all the blocks and the bases, at once rubbing the bases with the aid of young green olive oil, the blocks having gone into their own places, whole, without moving, faultless, with nothing remaining underneath, rubbing together evenly, and pounding thoroughly the things required for the *trimmata*: the parts going onto the joists using the powder from the close-toothed chisel, well-whetted and the parts going on the sub-levelling course using the powder from the evenly pointed chisel; rubbing secondly the side faces with the aid of olive oil and stone powder from the smooth finishing chisel, well-whetted. When he completes a joint, having cleansed it with *nitron*, and having washed it with clean water, then let him close it tight. The insertion of the dowels and the clamps and the dovetails, the weight of these, and all the pouring around of lead, the contractor will personally exhibit to the Naopoioi; let him close tight nothing unexhibited; if he closes up anything tight, taking it up again he will do it over from the beginning.

(IG VII 3073.154–174)

Building commissions on a number of projects had the right to assess penalties on the spot and fine contractors for minor infractions of the specifications. That such details were indeed checked and rigorously penalized can readily be seen in the inscribed accounts of projects. One such list of penalties from Delos illustrates the minute nature of the checking of each block:

On these (stones) the following penalties were assessed during our term against those who had contracted for the jobs according to specifications: against Proxenides son of Lysimachides of Acharnai, of the cornice-blocks on the [cella?] resting on the cornice-footing in the wall on the side next to the Artemision, the stone abutting the corner was damaged: penalty [---]

drachmai and the insertion of a patch.

(*IDélos* 104–124.15–21)

As well as controlling the materials used during construction, the building commissions maintained strict supervision of the men employed by the contractor as craftsmen and laborers. While the contractual agreement was signed between a state or sanctuary on the one hand and the entrepreneur on the other, it was sometimes stipulated in contracts that the commission would take a role in overseeing the quality, number, and behavior of the workers employed by a contractor, or at least would stipulate what was expected from them, with penalties for infractions. We find written requirements as to how many workers the contractor is to employ, for example, at Lebadeia: “He will work continuously within ten days of receiving the payment, working with craftsmen competent in the trade, not fewer than five” (*IG VII* 3073.12–15). The *naopoioi* certainly did check the competence of these men as the work progressed, “and if any of those men working with him (the contractor) is convicted of poor workmanship, let him be expelled from the job and no longer take part in the work; but if he does not obey, he will be fined, together with the contractor also” (*IG VII* 3073.176–178). In setting down such regulations, the commission maintained tight control over those with whom they had not themselves signed any agreement, instead adding pressure to the contractor to manage his workers or face financial penalty.

On large construction projects there will have been a great many craftsmen, masons, and laborers working in numerous groups under different contractors. The potential for those teams to damage other work around the sanctuary, or to get into arguments with neighboring teams, was significant, and accordingly we find within the specifications a series of measures designed to reduce those risks. At Tegea:

If anyone under contract for work harms any of the existing works, whether sacred or public or private, contrary to the terms of the contract, he will restore what is damaged at his own expense to a condition no worse than it was when he undertook the contract.

(*IG V ii.* 6.37–42)

A similar clause appears in a Lebadeian contract:

Let the contractor not damage any of the existing works in the sanctuary; if he should damage anything, let him repair it at his own expense, approvably in such time as the *naopoioi* order; and if the contractor for the setting should spoil any sound block during the work, he will substitute another approved one at his own expense, not hindering the job; and the spoiled block he will carry away out of the sanctuary within five days, but if not, the block will be sacred

(*IG VII* 3073.29–37).

In this instance, the builder has been given the blocks of stone to work on by the sanctuary officials, and so if he damages them he must replace them himself. The naopoioi, however, do not want their already crowded sanctuary littered with further broken blocks, and so threaten to confiscate the stone (as it becomes “sacred”), if he fails to make the effort to cart it away within five days, a threat which would deprive him of some recompense for the expense of having the replacement block quarried and hauled up to the sanctuary.

One problematic consequence of splitting up the specifications of a large building into smaller contracts was that several teams of masons were employed at the same time in close proximity to one another, and disputes could grow out of hand and halt progress. At Tegea, disputes between contractors had to be brought before the commission within three days, preventing disagreements from escalating over a long period (*IG V ii 6.2–6*). Regulations concerning dispute settlement between contractors often refer specifically to disagreements about the specifications, such as at Lebadeia: “If any of the contractors disagree with each other about any of the things written, the naopoioi will decide, swearing an oath over the works, and being more than half of them present, and let what they decide be authoritative” (*IG VII 3073.41–44*).

It would be easy to imagine fights breaking out when two sets of jobs were meant to join together but did not – for example, with two neighboring courses of stones – and one group accused the other of failing to use the right measurements. In such circumstances the quarrel would probably be about the specifications, and the naopoioi would have to judge whether there had been some infringement of the syngraphai on either side or whether the specifications themselves had to be altered, a right they gave themselves in this contract: “If in any way during the work it should be useful for any measurement written down to be lengthened or shortened, he will do as we order” (*IG VII 3073.22–24*).

Constructing a temple needed work to progress in a certain order, and a further complication with selling the contracts for many discrete pockets of specifications was the need for each job to be completed in time for the start date of the next contractor. Timetabling such an enterprise must have proven nightmarish at times, and the commissions emphasized to each group of workers the need for punctuality. Many contracts simply include a provision that the work was to be completed within so many days; for example, at Delos: “And when he has done all these things approved according to the specifications, the contractor for the job shall exhibit it to the naopoioi and the architect, being completed eight months from the time he contracted” (*IG II² 1678A.15–17*).

It is not stated to what degree these deadlines were negotiated at the bidding stage of the franchising process; perhaps part of the bid of an entrepreneur included the time within which he claimed to be able to complete the work. In

the syngraphai for the Skeuotheke (Arsenal) at Piraeus, the jobs have yet to be split up between the various teams of contractors, and so the inscription leaves instructions for the jobs to be completed within the time to which each contractor will agree in his own contract (*IG II² 1668.96–97*). Throughout the late fourth and third centuries BCE, timetables for work became embedded within the syngraphai and increased in complexity. The payment to the contractor no longer comprised a small down payment at the beginning and a lump sum on completion; rather, there evolved a series of payments throughout the work, allowing the contracting body greater control over the progress and order of the works. An Athenian contract for a building on Delos of the mid-fourth century BCE offers half of the contracted price on the establishment of guarantors, a quarter on completion of half the work, and the remaining quarter when the sanctuary officials approve the completed work (*IG II² 1678A.21–23*). Another way of holding back payments to ensure greater adherence to the syngraphai was the use of the *epidekaton*, or 10 percent of the contractor’s fee, which was withheld until the final approval of all the works, partly as an incentive to complete the jobs exactly to specifications but also as a pot of money from which to recover more easily any fines assessed against the contractor.

Accounting

Our earliest building accounts were generated by the great projects of the Athenian Acropolis in the mid-fifth century BCE, chief among them the huge marble stele recording the year-by-year income and expenditure for the 15-year project to build the Parthenon. Compared to the labyrinthine accounting systems of Delos and Delphi in the fourth century BCE, these records certainly appear laconic. Rather than list the names of contractors or individuals hired for jobs they name the men running the project (the *epistatai*), the sums of money they were given, and how they spent them. The emphasis was on a clear, publicly accessible record of how the state monies were being spent and a check on the boards handling those funds. The stele itself is monumental: written on all four sides, 1.8 m high, 1.6 m wide, and 20 cm thick, with enough space around it to access all faces, it showed the Athenians each year where their money was going next to the rising structure. One set of accounts (*IG I³ 449*) from the fourteenth year of construction (from 434/3 BCE) serves as an example:

For the Commissioners (*epistatai*), for whom Antikles was Secretary, in the fourteenth year of the Council (*Boule*), in which Metagenes was first Secretary, when Krates held the archonship of the Athenians.

The receipts (*lemmata*) for this year are the following:

--	--

1,470 (drachmai)	Balance
	from the previous
	year
7[4] staters	Gold staters
	[of Lamps]akos
27 and 1/6 staters	[Gold] staters
	Of K[yzik]os
25.000 (dr.)	From the Treasurers [of the]
	Goddess' Treasury
	For whom Krates was
	secretary, of Lamptraí:
1,372 (dr.)	From gold sold off,
	in weight, 9[8]:
	payment for it:
1,305 (dr.) 4 (ob.)	From ivory sold
	off, in weight, [3] Talents
	60 (dr.): payment [for it]:
	Expenditure
[...] 200	for purchases
[- -] 2 (dr.) 1 (ob.)	
	hired wages:
1,[9]26 (dr.)	for the workmen [at Pentele
2 (ob.)	and the marble loaders
	onto the wagons]:
16,392 (dr.)	For sculptors
	of the pediments: the pay:
[1,]800	For monthly wages
[..] 11 (dr.) 2 (ob.)	
[- - -]	Balance (at the end)
[- - -]	of this [year]:
[74]	[Gold staters]
	[of Lampascus]
[27]	[Gold staters]
[1/6]	[of Kyzikos]

Each year's board of epistatai began by recording the balance received from

the previous year, which always included the gold (though, in fact, electrum) staters of Lampsakos and Kyzikos, coins which the commission could not spend during the whole project; workers apparently wanted to be paid in good Athenian silver. Monies then flow in from the treasury of Athena and from the selling of gold and ivory now surplus at this late stage in the project. Elsewhere in the accounts funds are raised from other sources also, such as from the Hellenotamiai, often thought to be the *aparche* or one-sixtieth of the tribute paid by the allies of the Athenian Empire, which was given to Athena. The accounts continue with the expenses of the year, materials bought, wages and hired labor paid out; followed by the balance at the end of the year's work, including the unwanted foreign coins.

By stark contrast, the accounts and accounting systems for the rebuilding of the Temple of Apollo at Delphi after 373/2 BCE, following the destruction of the sixth-century predecessor, are bewilderingly complicated. The project was administered by a board of *naopoioi*, which protected and ran the sanctuary and were appointed by the *Amphiktyony*, a set of constituent communities which themselves changed repeatedly in composition and alliances through the political upheavals of the time. A further board of treasurers (*tamiai*) were added to the administrative mix in 337 BCE by Philip II during his reforms of the *Amphiktyony*. Money was received from many sources: the *Amphiktyony* levied two successive poll taxes on its peoples, voluntary donations were offered by cities, states and individuals outside the *Amphiktyony*, fines were collected, and the city of Delphi made available to the *naopoioi* generous credit, perhaps between 150–200,000 Aiginetan drachmai. To complicate matters further, accountants on the project needed to calculate in three coinage standards – Attic, Aiginetan, and, from 337 BCE, in a new Amphictyonic currency. Work on the temple was not completed (unsurprisingly) until the 320s.

Inscriptions: Paper, Chisel, and Stone

The “paper” (or rather papyrus or wooden writing tablet) copies of documents produced by building commissions can often be detected behind their inscribed versions. When deciding what constituted a binding contract, the commission had a wealth of matters to discuss and documents to put together. In a large project such as the building of a temple, there were dozens if not hundreds of contracts for the various parts of the building and its decoration, many of which would contain the same information: a contract for the setting of one course of paving stones within a colonnade would vary little from the details given to the contractor setting the next neighboring course. At Lebadeia, for example, in the 220s BCE, the Boeotian Confederacy attempted – and ultimately failed – to build a temple to Zeus Basileus. We have

fragments of perhaps a dozen of the many inscribed contracts to build parts of the structure, and many of them contain verbatim repetitions of clauses common to all the contracts. Clearly the secretary had at his disposal a stock pile of clauses relevant to aspects of contracting or building technique and inserted them where appropriate in each case. Some repetition could not be avoided, and yet questions of economy had to be addressed, especially as inscribing a large document on stone and having it erected in a sanctuary was a very expensive form of recording. When the contractor had to abide by general rules and regulations of sanctuaries or states, not every contract could contain all the relevant laws that appertained to building work. The repetition of procedural matters could be reduced by referring the contractor to the relevant part of another contract on the same project, as we find on Delos: “(he will do) just as is written in the *syngraphai* for the contractor of the *orthostates*” (*IG* II² 1678A.21–23). At Tegea, the polis inscribed a general set of legal and procedural matters that would be common to all building work both sacred and public, to which each specific contract was also subject (*IG* V ii 6).

It was essential that the officials overseeing the works, and the workmen themselves, had access on site to these documents, and when contracts refer internally to the need to consult other documents, those had to be accessible as well. One response to this need for access to a large number of related documents was to erect a wall of inscribed stone *stelai*, which kept all the documents together and facilitated access to the information they contained, cutting down the need to inscribe each contract separately with many repeated clauses. At Lebadeia we possess the actual contract sold by the building commission to erect such a wall of *stelai*, specifically designed to display all the contracts for the temple project; now in fragments, it may originally have been over 20 m in length (*IG* VII 3073; Pitt 2014). The publication of building contracts in such a fashion was laborious and very expensive, and the expenditure of so much time and money on inscribing something somewhat unnecessary, if the sole purpose of the inscriptions was to allow the various interested parties to examine the documents of the project. The commission must have had in mind the additional desire to monumentalize the documents they had produced, to chronicle the progressing work of an important sanctuary building and to display publically a transparent accountability of the officials involved. The places where many Greek building contracts were set up, however, also demonstrate that the *stelai* themselves offered a useful addition to the commission’s obsessive need for control: at many sites where we know either by findspot or through internal references in the texts in what positions the *stelai* were erected, the inscribed contracts were set up within sight of the building works. The evidence clearly shows the authorities’ concern for the accessibility of the texts on site. The contracts and accounts were to be read and used by a large group of interested parties. The architects and building commissioners needed to check the progress of the work against

the specifications, and any democratically minded citizen could, without difficulty, check the finances of the progressing works.

FURTHER READING

For collections of architectural inscriptions and translations, see: Jeppesen 1958, Maier 1959–1961, Fornara 1977 (nos. 93, 114, 118, 120), Harding 1985 (nos. 17, 60, 84, 134), Meiggs and Lewis 1988 (nos. 44, 54, 59, 60), Hellmann 1999, Rhodes and Osborne 2003 (nos. 9, 45, 60, 66), and Jacquemin, Mulliez, and Rougemont 2012 (nos. 20, 37–45). For works on building projects and their inscriptions, see the Athenian Acropolis (Dinsmoor 1913a; 1913b; 1913c; 1921a; 1921b; Burford 1963), Delos (Davis 1937), Delphi (Davies 1998; 2001), Eleusis (Davis 1931), Epidauros (Burford 1969; Prignitz 2014), Lebadeia (Pitt 2014), and in general, Scranton 1960, Wittenburg 1978 and Feyel 2006.

REFERENCES

- Austin, M., J. Harries, and C. Smith, eds. 1998. *Modus Operandi: Essays in Honour of Geoffrey Rickman*. BICS, Suppl. 71. London.
- Burford, A. 1963. "The Builders of the Parthenon." In Hooker, ed., 23–35.
- Burford, A. 1969. *The Greek Temple Builders at Epidauros*. Liverpool.
- Davies, J.K. 1998. "Finance, Administration, and *Realpolitik*: The Case of Fourth-Century Delphi." In Austin Harries, and Smith, eds., 1–14.
- Davies, J.K. 2001. "Rebuilding a Temple: The Economic Effects of Piety." In Mattingly and Salmon, eds., 209–229.
- Davis, P.H. 1931. *Some Eleusinian Building Inscriptions of the Fourth Century before Christ*. Geneva.
- Davis, P.H. 1937. "The Delian Buildings Contracts." *BCH*, 61: 109–135.
- Dinsmoor, W.B. 1913a. "Attic Building Accounts I: The Parthenon." *AJA*, 17: 53–80.
- Dinsmoor, W.B. 1913b. "Attic Building Accounts II: The Erechtheum." *AJA*, 17: 242–265.
- Dinsmoor, W.B. 1913c. "Building Accounts III: The Propylaea." *AJA*, 17: 371–398.

Dinsmoor, W.B. 1921a. "Building Accounts IV: The Statue of Athena Promachos." *AJA*, 25: 118–129.

Dinsmoor, W.B. 1921b. "Attic Building Accounts V: Supplementary Notes." *AJA*, 25: 233–247.

Feyel, C. 2006. *Les Artisans dans les sanctuaires grecs aux époques classique et hellénistique à travers la documentation financière en Grèce*. Athens.

Fornara, C.W. 1977. *Translated Documents of Greece and Rome I: Archaic Times to the End of the Peloponnesian War*. Cambridge.

Harding, P. 1985. *Translated Documents of Greece and Rome II: From the End of the Peloponnesian War to the Battle of Ipsus*. Cambridge.

Hellmann, M.-C. 1999. *Choix d'inscriptions architecturales grecques*. Lyon.

Hooker, G.T.W., ed. 1963. *Parthenos and Parthenon*. Oxford.

Jacquemin, A., D. Mulliez, and G. Rougemont. 2012. *Choix d'inscriptions de Delphes, traduites et commentées*. Athens.

Jeppesen, K. 1958. *Paradeigmata: Three Mid-Fourth Century Main Works of Hellenic Architecture Reconsidered*. Aarhus.

Maier, F.G. 1959–1961. *Griechischer Mauerbauinschriften*. 2 vols. Heidelberg.

Mattingly, D.J. and J. Salmon, eds. 2001. *Economies beyond Agriculture in the Classical World*. New York.

Meiggs, R. and D.M. Lewis. 1988. *A Selection of Greek Historical Inscriptions to the End of the Fifth Century B.C.* Rev. ed. Oxford.

Papazarkadas, N., ed. 2014. *The Epigraphy and History of Boeotia: New Finds, New Prospects*. Leiden.

Pitt, R.K. 2014. "Just as It Has Been Written: Inscribing Building Contracts at Lebadeia." In Papazarkadas, ed., 373–394.

Prignitz, S. 2014. *Bauurkunden und Bauprogramm von Epidauros (400–350): Asklepiostempel, Tholos, Kultbild, Brunnenhaus*. Munich.

Scranton, R.L. 1960. "Greek Architectural Inscriptions as Documents." *HLB*, 14: 159–182.

Rhodes, P.J. and R. Osborne. 2003. *Greek Historical Inscriptions 404–323 BC*. Oxford.

Wittenburg, A. 1978. *Griechische Baukommissionen des 5. und 4. Jahrhunderts*. Munich.

Woodhead, A.G. 1997. *Inscriptions: The Decrees. Agora 16*. Princeton.

CHAPTER 15

The Interiors of Greek Temples

Margaret M. Miles

The exteriors of Greek temples, stoas, and monuments have had an enormous aesthetic impact on many subsequent architectural styles and periods. Typically photographers of ancient Greek buildings artfully position their cameras to catch finely sculpted columns and entablature against a pellucid blue sky. Nonetheless, interiors decorated with columns, illuminated with windows, and marked by a progression of defined spaces began inside Greek temples, long before the more spectacular achievements of Roman interior design. From the Archaic to the Hellenistic period we see a rich blossoming of architectural ornamentation, attention to lighting, and increasing accommodation to the experience of the devotees inside the building. By far the most important installation inside the temple was the image of the deity. Furnishings were added to the built structure that enhanced the atmosphere of an honorable and worthy setting for the cherished statue: paintings, tapestries, lamps, tables, thrones, cupboards and chests of votive offerings, and commemorative offerings of all sorts such as shields, armor, and historical and natural relics. This essay describes the highlights of these developments and customs according to recent research, so as to give a more complete picture (inside as well as out) of Greek temples.

Light in the Interiors

During the daytime, the illumination of interiors naturally depended on ambient daylight; this in turn was affected by a building's orientation to the sun. How temples were oriented spatially within the landscape varies within regions of the ancient Greek world: in Sicily and southern Italy, temples mostly face east, while in mainland Greece, there is more variety (Salt 2009, Boutsikas 2007–2008). In Sicily and South Italy, Greeks from mainland and eastern Greece arrived in the Archaic period, and when they founded new temples, their choice of setting and orientation seems to have been open. A few temples were built on top of previous structures built by non-Greek peoples who were earlier inhabitants, but many temples had completely new foundations. A range of considerations must have loomed as important to the early settlers, such as how the landscape affected their perception of the sacred, social, and political conditions, the intended use of adjacent lands, and

visibility (Cole 2004, de Polignac 1995). Recent research has brought into question the traditional scholarly speculation (rooted in the nineteenth century) that such new foundations were laid on the axis of the rising sun on the deity's birthday, or a significant festival day associated with the sanctuary; rigorous methods and new technology now allow significant, plausible advances in interpreting orientations of Greek temples (Boutsikas and Ruggles 2011).

The many instances of apparently deliberate solar orientation in mainland Greece may have been inherited from earlier iterations of temples, such as the late fifth-century Temple of Apollo at Bassai, which has the same north-south orientation as its predecessor (Kelly 1995; Cooper 1996). The existing temple there is oriented with its long axis to the north, so that the rising sun falls through a large, framed door-like window, closed with a grille, on the east side of the temple. Other, non-solar motivating factors for eastern orientations have emerged as more likely for some temples, in particular, facing constellations in the nighttime sky. The nighttime sky was vivid in the eras before modern light pollution, and constellations were used by mariners for navigation at sea, by farmers for predicting seasons for agriculture, for noting changes in time and season, and for religious rituals. Such rituals could have been enhanced with an appropriately oriented architectural setting, with the porches and peristyles of temples used as viewing platforms (Boutsikas 2015).

In the early Archaic period, the interiors of temples were long, narrow rooms, usually with a colonnade down the center axis, such as the Heraion on Samos and the Temple of Apollo at Thermon. The main door of a temple provided the primary light for interiors of temples during the day (hence the importance of the overall orientation). Such contrasts in a long narrow space created a shadowy but mostly dim interior, with reduced light that could have added to the sense of a sacred atmosphere inside the temple. Yet some early Archaic temples have integral benches inside, along mudbrick walls (e.g., the Temple of Apollo at Metropolis, and the temple at Soros, near Volos (see [Chapter 2](#))); these must have been used for gatherings, such as dining, discussions, or perhaps even group rituals, probably lit by oil lamps. Where there was no ceiling, opaion tiles (special terracotta roof-tiles made with circular openings, of approximately 10–15 cm, usually with a raised ridges to allow rain to flow around them) provided ventilation and some light to the interior, although extant examples date from the fifth century BCE and later (in Etruria, some examples have been found that date even earlier). For some Classical temples, marble opaion tiles have been found, suggesting that ventilation and perhaps light were wanted for attic spaces. Occasionally such opaion tiles have small hoods for further protection from rain (Wikander 1983). A few very large temples were hypaethral, built with a large open-air space or even a courtyard in the center, such as the Ionic temples at Samos and in Asia Minor of the Archaic period, and the Doric Temples of Zeus at Akragas (modern

Agrigento) and Selinous in Sicily (Bell 1980).

Windows, even if initially rather small, began to be included in stone temples in the late Archaic period, and it is possible windows existed even earlier. The early Classical Temple of Aphaia on Aigina had small windows high on the side walls of the cella (Bankel 1993). In temples in the Greek West (Sicily and southern Italy), pairs of stone staircases leading to the attic were included just behind the door-wall, and the stairwells typically had small slot windows to illuminate the steps (Miles 1998/1999) (Figure G.3). An example is the Temple of Concord at Akragas (circa 450 BCE), where rectangular slot windows in the walls of the stairwells still exist ([Figure 15.1](#)).



Figure 15.1 Temple of Concord, Akragas, windows in stairwell.

Source: M.M. Miles.

On the Athenian Acropolis, architects began to include larger windows at least as early as Iktinos' Parthenon; two large, framed windows on either side of the great chryselephantine doors provided light for the wide interior (Korres 1984, Pope and Schultz 2014). Windows with molded frames also are preserved in the northwest wing of the Propylaia (Figure 15.2), and large windows (with alterations in the Roman period) were included in the Erechtheion (Temple of Athena Polias). Because of the example set by these

distinguished buildings, we should expect to find windows in later temples, even though the evidence for them is only rarely preserved. Some Hellenistic temples in Asia Minor had “epiphany windows” in their pediments (e.g., Temple of Artemis at Magnesia-on-the-Maeander; Temple of Artemis at Ephesos), possibly used for staging dramas for a populace gathered below (on epiphanies, see Platt 2011). These would not have admitted light to the interiors but rather to the attic spaces behind the pediment ([Figure 15.3](#), 31.2).

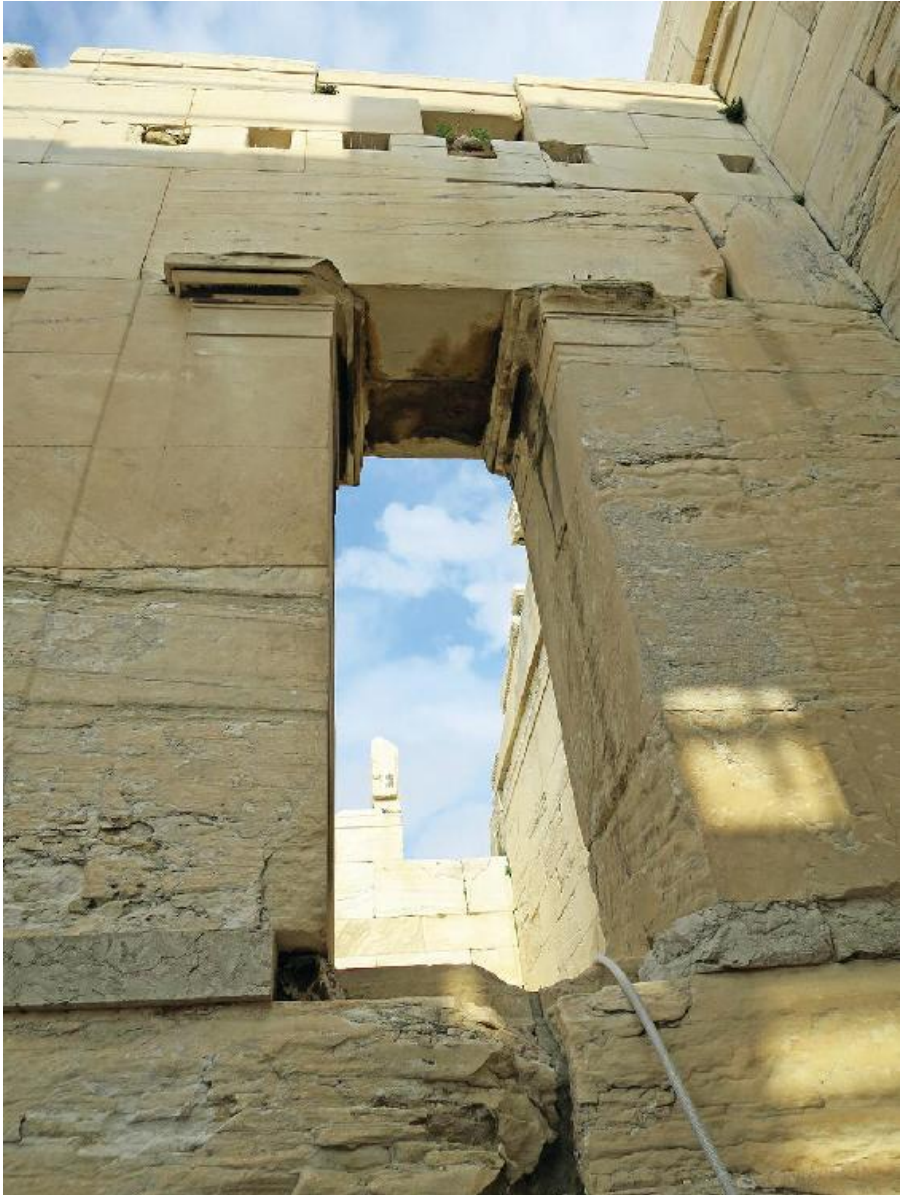


Figure 15.2 Propylaia, window in Pinakotheke.

Source: M.M. Miles.



Figure 15.3 Temple of Artemis, Magnesia-on-the-Maeander, blocks of pediment with epiphany windows.

Source: M.M. Miles.

At night, or whenever more light was needed in the interior, people could use oil-lamps, less hazardous than torches, but still a hazard. Fires inside temples are documented, such as the one that burned down the Temple of Hera at Argos in 423 BCE when the priestess Chrysis put a torch near dried garlands and then fell asleep (Thuc. 4.133.2). In some sanctuaries, oil lamps have been found in great abundance, suggesting that nocturnal rituals were an important part of how the sanctuary was used: the area around the Classical Temple of Demeter Malaphoros at Selinous has yielded thousands of lamps, and in the second century CE, a room in the complex dedicated to the Egyptian gods at Marathon, built by Herodes Atticus, was found packed with very large terracotta lamps. In many excavations across the Mediterranean, lampstands of terracotta and bronze have been found dating from the Archaic period onward that were designed to support one or more lamps. They were used in temples as well as domestic contexts (Seidel 2009).

Organization of Space

Peripteral temples in mainland Greece usually have both a pronaos before the sekos or main cella (sometimes called the *naos*, also a word for “temple” as a whole), and an opisthodomos. Already circa 500 BCE in Athens we see the creation of multiple rooms within the length of the interior of temples: the foundations of the Old Temple of Athena Polias (burned by the Persians and eventually replaced by the Erechtheion) clearly indicate that there were at least two parallel western chambers behind the main cella. In the Older

Parthenon, the first temple built on the south side of the Acropolis, a large chamber is reconstructed on the west end, a feature repeated in Iktinos' Parthenon, along with an opisthodomos. At Paestum, the Archaic Temple of Hera (I) also has an *adyton*, an anciently attested term for an enclosed back chamber (Hollinshead 1999); this feature is found commonly in the Greek West. Sicilian Greek temples generally have at least two rooms, with a step upward to each level from the doorway, and a pronaos, and in the Classical period, often an opisthodomos.

The inner walls of the rooms have subtle divisions along the vertical surface: the wall itself is built on a *toichobate*, which could be ornamented with moldings, both inside and outside the wall, thus serving as a visual border and transition between the floor and the wall, both in the peristyle and inside the temple. Above this the lower part of the wall consists of pairs of orthostates (usually about 1 m high or more, according to the scale of the building), the individual blocks approximately square in outline, set parallel along the toichobate to establish its depth. Above this are individual rectangular wall blocks, crowned at their full height at the ceiling with the *epikranitis* or wall crown, articulated with moldings. The molded epikranitis serves as the transition between the vertical wall and the horizontal ceiling. These articulations in limestone and marble may have derived from earlier temples made of mudbrick placed on stone foundings or orthostates (e.g., the Temple of Hera at Olympia, circa 580 BCE); the epikranitis served in those early temples as the transition from mudbrick to a wooden roof support and ceiling (see [Chapter 4](#)). Such visual divisions of the vertical surface into zones have had a long later history: they appear in domestic wall painting of the Roman period in Pompeii and Herculaneum, and vestigial moldings below the ceilings or above the floor as a wall base are used in domestic and traditional architecture even today.

The peristyle itself, even though open to the elements, may be considered a part of the interior of the temple as a functional semi-enclosed space. The aesthetics of the exterior of the colonnades and articulation of the orders have absorbed much of the attention of architectural historians, but here what is of concern is the function of the space itself. P. Corbett has collected literary testimonia that describe performances of hymns, and recitations such as that of Herodotus, who is said to have read aloud his *Histories* from the opisthodomos of the Temple of Zeus at Olympia (Lucian, *Her.* 1–2; Corbett 1970: 153). The acoustics were enhanced by that setting, and certainly the opisthodomos offered a visible, framed position, set higher than the surrounding temenos. The peristyle was not used for storage of readily portable valuables but, instead, fixed dedications and statuary were set around the outer walls and columns, as preserved cuttings attest. More unusual attested items include the letter “E” at Delphi, the subject of an essay by Plutarch, which was hung or attached to the wall of the Temple of Apollo near

the entrance; we also hear of an ode of Pindar set in gold letters onto the side of the (non-peripteral) Temple of Athena at Lindos (schol. Pind. *Ol.* 7). In general, arms and armor and chariot wheels, hanging high on walls, seem to be the more common objects we should visualize there.

Elaboration of the ceilings of the peristyle increased in magnificence over time: in Athens and Attica, Iktinos' Parthenon, the Hephaisteion, the Temple of Nemesis at Rhamnous, the Temple of Athena Pallenis (later Ares) are among temples with marble ceilings in the peristyle, with molded and painted coffers. A handsome, ornate marble ceiling, with a variety of flowers in high relief in the soffits of the coffers, was provided for the peristyle of the Tholos at Epidauros (circa 330 BCE). Pytheos, the architect of the Temple of Athena at Priene, included ceiling coffers carved with sculpted scenes of a gigantomachy and possibly an Amazonmachy, thus moving beyond the more typical stars, floral motifs, and abstract patterns (Carter 1983; Tanke 1989).

The Articulation and Placement of Interior Columns

Architects designed interiors to suit specific requirements for ritual, maintenance and storage, while ensuring that proper structural support was provided for the roofing and ceiling, in temples with a ceiling. In early temples, interior columns were crucial structural supports for roof timbers and the ceiling, typically wooden, from the Archaic period onward. The development of trusses meant that wider temples could be built without interior supports, and in general, late Archaic and Classical temples constructed in the Greek West (Sicily and southern Italy) do not have interior colonnades (one exception is the Temple of Hera II at Paestum). Ample supplies of timber were available in the Bruttii region of Reggio Calabria and on the slopes of Mt. Etna. In mainland Greece, interior colonnades in the main cella were maintained into the Classical period, typically a double set of superimposed Doric columns, as in the early Classical temples of Aphaia on Aigina, of Zeus at Olympia, and the Parthenon.

In Doric temples, the choice of two, small-scale superimposed columns (with an architrave between them) made sense because of the smaller lower diameter of the lower series. If tall columns were used, as tall as the interior height of the cella, they would need large lower diameters in proportion, which would take up much more of the interior floor space. Ionic temples with interior columns used the more slender Ionic order for both the exterior and the interior. At Paestum, the Temple of Athena (circa 510 BCE) is perhaps the first temple with a Doric exterior and Ionic columns in the interior, used around the porch of the inner building. The Older Parthenon, begun on the

Athenian Acropolis soon after the Battle of Marathon (490 BCE) but then burned by the Persians in 480/479 while still under construction, has several Ionic elements and probably was intended to have Ionic columns in the back chamber. Iktinos' Parthenon most probably repeated those Ionic columns in the back chamber, although the Corinthian order has also been suggested as an alternative (Pedersen 1989). The combination of Doric exterior and Ionic interior was used also in monumental stoas, such as the Stoa Poikile in the Athenian Agora (460 BCE). Mnesikles adapted Ionic columns for the interior of the otherwise Doric Propylaia to the Acropolis (see [Chapter 11](#)).

The existence of an interior colonnade led to other innovations. In the Temple of Aphaia at Aigina (just after 480 BCE), a wooden stair was installed that led to a gallery, also of wood, built between the side walls and the middle architrave of the double interior colonnade. This is found also at the Temple of Zeus at Olympia (circa 460 BCE), where visitors could ascend to view the chryselephantine statue of Zeus, made by Pheidias. Such galleries and stairways seem to have been afterthoughts since they are not well integrated into the overall design.

An innovation in the Parthenon (447–432 BCE) was the creation of a colonnade in the shape of the Greek letter Pi, which served as a visual frame for the colossal chryselephantine image of Athena Parthenos, set just in front of the back return of the colonnade. This resulted in a space around the sides and back of the main cella of the temple that permitted circumambulation of the image (thus being a very early version of an ambulatory). The space was soon lined with chests, dedicated furniture, and cupboards for storage of votives, as we learn from preserved inventories. There is no evidence for a gallery in the Parthenon, but there was a utility stair in the fabric of the door-wall of the pronaos that led to the attic, used for maintenance. The great eastern doors of the temple were also decorated with gold and ivory (Pope and Schultz 2014), perhaps with figured scenes.

The design of the Temple of Apollo at Bassai must have posed a challenge for the architect Iktinos as it seems the patrons wanted something very similar to what had been there earlier, yet they were willing to allow him to move forward in other proportions as long as certain conservative requirements were met, such as the northern orientation and the long, narrow archaizing plan. He designed an interior that was quite new for its time (circa 420 BCE). He “pushed” the interior, Ionic columns against the wall, so that they are partially engaged, crowned them with a continuous Ionic frieze, and used the new Corinthian order for a single column located in the center back of the longer chamber, with open access to the back chamber. The back chamber was illumined by the side door-like, grilled window noted earlier in the chapter. His design gave a new prominence to the interior of the temple: for the first time since early experiments on Crete, a continuous sculptured frieze ornamented the interior, depicting a centauiromachy and an Amazonomachy.

Engaged columns and nearly engaged columns were then used repeatedly in the interiors of subsequent temples, in ever-varying or new combinations. After the Archaic Temple of Athena Alea at Tegea burned down circa 395 BCE, its successor, designed by Skopas of Paros, featured an interior with engaged Corinthian columns. Unusually, it also had a side door on its north side, with a ramp leading up to it, similar to the ramp leading up to the front, eastern door. The Doric Temple of Zeus at Nemea (circa 330 BCE) included a freestanding colonnade in the interior (in the shape of the Greek letter Pi, like that in the Parthenon) with Ionic columns superimposed on Corinthian columns: thus all three orders were used in the temple for the first time. It also had a sunken crypt behind the back return of the inner colonnade, a variation on the adyton.

Architects designing interiors of temples built during the fourth century BCE continued to expand and elaborate on the use of columnar orders as a way to make the interior space more magnificent and more monumental (Winter 1982). These efforts show that the setting for the cult image and the experience of the devotee were increasingly considered and addressed with fresh variations, but using a traditional architectural vocabulary. The mid-fourth century BCE is also the period when architects were asked to design buildings with no accessible interiors at all, such as small-scale choregic monuments in Athens, and large funerary monuments like the Mausoleum in Halikarnassos. The architects of these monuments used the prestigious visual vocabulary of temples, developed over centuries, now for new commemorative purposes.

Interior Stairs, Attics, and Basements

Pairs of interior staircases, leading to the attic, are characteristic features of Greek temples in Sicily (and southern Italy) from the late Archaic period through the Classical period. This feature added expense, effort and material to the construction costs, since the stairwells are placed over especially deep foundations included to support them, and extra stone was needed for the walls and steps: they are certainly not afterthoughts or casual additions. The stairs may indicate that the attic space was used for rituals of some sort (Miles 1998/1999). Nearly all the temples with the stone staircases have no interior colonnade.

In mainland Greece, the roof timbers and underside of the roofing system were maintained from the attic, accessed via trapdoors. Pausanias (5.20.4–5) tells of a desiccated corpse of a soldier, discovered at Olympia in the attic space of the Temple of Hera in the lifetime of his interlocutor Aristarchos (second century CE). From the armor of the corpse, he was judged to have died of his wounds from a battle that took place hundreds of years earlier,

circa 400 BCE; apparently he had climbed up into the attic through a trapdoor after he was wounded and had then perished. If we accept the story, maintenance of that temple seems to have been infrequent, or not thorough throughout the attic.

Some Hellenistic temples in Asia Minor have complex interiors that required staircases in between interior levels. The Temple of Apollo at Didyma (circa 300 BCE), for example, has a large, open-air courtyard in its center; a wide flight of stairs gives access to an upper level on the east end, near the doorway (whose threshold is so high only a god could cross it without climbing), and from that level a pair of stairwells led to an upper chamber. The stairwells have ceilings carved with a deep meander pattern. The Temple of Apollo at Claros (third century BCE) preserves a basement structure, accessed through stairs, that could be visited by petitioners of the oracle as does the Temple of Zeus at Aizanoi (in its last phase, second century CE).

The Tholos at Epidauros (circa 330 BCE) has an intricately designed basement consisting of a series of concentric walls with passageways between them, suggesting from a modern plan a maze-like design, perhaps to be accessed by a wooden stair through the center, although part of a (very heavy) white marble circular disk for the center of the floor of the temple is preserved. The basic function of this circular building has been long debated: was it a temple, or cenotaph for Asklepios at Epidauros, or something else? Peter Schultz and Bronwen Wickkiser (2010) suggest that this design of the basement was not intended to be used by people walking through it but rather that it served to help amplify musical performances from within the superstructure. Their idea is supported by literary testimonia that refer to musical performances within such circular structures in sanctuaries. This new proposition is intriguing and persuasive; more acoustical studies on ancient buildings should be carried out.

The sanctuary buildings with basements noted here are exceptional: most Greek temples were constructed on one primary level (the stylobate) with only one, two, or three steps between rooms, with the variation of stone staircases to the attic in western Greek areas. The simplicity of interior design of most temples reminds us of their primary practical function: to serve as a housing for the image of the deity and for storage of the deity's possessions. The exceptions with more elaborate interiors show that Greek architects were fully capable of a larger and more imaginative repertoire, but apparently there was little demand for it. Since temples were typically built on promontories, hills, or in other prominent locations, a kinetic experience for visitors of "going up" to a sacred place was provided more by the exterior setting of the temple than any passage through interior spaces.

Cult Images

Readers of Pausanias's travelogue (circa 165 CE) will be impressed by his motives for journeying through what was already considered in his time "old" Greece: he wanted to see cult images in temples and understand their history and unique qualities. The cult images served to bring the deity (as represented by a statue) firmly into the community as a participant in rituals, thus rendered more vivid, repeatable, and focused (Elsner 1996, Nick 2002, Platt 2011: 77–123). Pausanias mentions the architecture of temples and sanctuaries only rarely, but he gives us excellent descriptions of cult images, paintings, furniture, and other dedications inside the sanctuaries he visits. The primary purpose of Greek temples, we deduce, was to provide a suitable setting for the image of the deity, much like a "home" for the god, whose presence could be evoked through the vehicle of the image (Burkert 1988, Elsner 1996, Scheer 2000, Steiner 2001). This understanding helps make sense of what is essentially a *domestic* array of offerings that were considered appropriate dedications and accumulated inside the temple (discussed later in the chapter). The images of deities most commonly were made of terracotta, wood, marble, or gold and ivory (chryselephantine) over a wooden armature, or a combination of materials (acrolithic). Occasionally images were cast in bronze, but they were fairly rare in the Classical period; notable examples are the images of Hephaistos and Athena in the Hephaisteion of Athens, for which we have preserved the financial accounts that list the purchase of large quantities of copper and tin for the alloy (*IG I³ 472*).

Typically such images were set up on a limestone or marble base, sometimes called a "praedella," and from at least the fifth century BCE onward, the bases themselves were decorated with sculpted reliefs, usually narrating a story about the deity (Kosmopoulou 2002). Images of seated deities were represented seated on thrones that were also lavishly decorated, such as the statue of Zeus at Olympia described by Pausanias (Paus. 5.11.1–9; Lapatin 2001, 79–85). A late Archaic image of Dionysos at Ikaria in Attica (now in the National Museum in Athens) was set under a Pentelic marble baldacchino, with a soffit carved with bunches of grapes (preserved: Romano 1982, Despinis 2007; see also [Chapter 13](#)). A series of Athenian cult statue bases of the fifth century BCE bore scenes referring to divine births or divine kinship: of Pandora below the Athena Parthenos; of Erichthonios below Hephaistos and Athena in the Hephaisteion; of Helen, presented to Nemesis, her birth mother, by Leda (her foster-mother) below Nemesis at Rhamnous. Kinship, genealogy, and divine narratives that established relationships with humans were thus showcased inside the temples.

The cult images sometimes had low barriers preventing very close access to the statues. The foundations for such barriers are preserved in the Temple of Athena Sounias at Sounion, and a barrier is reconstructed at Rhamnous. Traces of such barriers have been found at Aigina, Kleonai, Lindos,

Lykosoura, Olympia, and Priene, and their meaning is more likely symbolic than actually a device for controlling unruly visitors (Mylonopoulos 2011). Ample literary evidence exists for people praying before the statues and kissing and touching them (Corbett 1970). Cicero describes a very old bronze statue of Herakles he saw at Akragas (the object of an attempted robbery by Verres), whose beard and chin were worn smooth over time by repeated stroking and kissing (Cic. *Verr.* 2.4.94), like the foot of a bronze statue St. Peter in the Vatican.

Reflecting Pools

A remarkable feature was introduced into the Parthenon: a shallow, reflecting pool, set in front of the chryselephantine image of Athena Parthenos. The addition may have been an afterthought, when conservation of the ivory on the image became problematic. Even though the floor of the temple is very slightly domed because of the overall curvature of the platform on which it is built, it was nonetheless possible to install it, because the stylobate for the interior colonnade rises about 4 cm above the level of the pavement in front of the statue. A low marble rim was set across the width between the two colonnades, and on both sides of the base for the statue, to create a very shallow pool about 9.0 × 9.5 m (Stevens 1955). A similar pool was more carefully constructed at Olympia, inside the Temple of Zeus, of dark Eleusinian limestone for the floor and white Pentelic marble for the rim; J. Hurwit (2005) suggests the pool in the Parthenon was added later in rivalry with the one at Olympia, which appears to have been planned precisely. Pausanias, after seeing both – and a third pool, in the Temple of Asklepios at Epidauros – explains that the pools were a response to the requirements for the maintenance of the chryselephantine statues. In the Parthenon, he believed the dry air necessitated water in the pool to increase humidity, whereas at Olympia, olive oil was used, perhaps in connection with cleaning the image (Paus. 5.11.10, Lapatin 2001). The aesthetic effect of both pools would have been to increase the ambient light, and reflect the image. Whether for aesthetics or conservation, or both, the pools were considered significant enough to sacrifice a large amount of floor space in the interiors.

Paintings and Votive Statues

Paintings on the walls of Greek temples have been found at Isthmia and Kalapodi that date to as early as the seventh century BCE; these were painted

on stucco and thus were an integral part of the wall, both inside and out (see [Chapter 12](#)). For the Classical and Hellenistic periods, “painted interiors” could include paintings on stucco (frescoes) in some temples, and paintings on wooden panels (for the collected sources and evidence, see Pollitt 1990, Hurwit 2014). The famous paintings in the Stoa Poikile (“Painted Stoa”) in Athens were apparently on large panels, since they were removed in the late fourth century CE. Stoas in particular offered a very well-lit, sheltered space for the display of large paintings. Large, programmatic paintings in temples and other sanctuary buildings such as the Lesche of the Knidians at Delphi are known from literary descriptions. Today we gain some idea of them from smaller-scale renditions and reflections in South Italian tomb-painting (such as the Tomb of the Diver at Paestum), and numerous examples in Macedonian tombs, or as reflections in vase-painting, where compositions thought to be based on monumental wall-painting have been identified (Stansbury-O’Donnell 2014).

The surface of the interior, marble walls of the Hephaisteion in Athens are lightly picked, suggesting that they were intended to have large-scale friezes applied to them. Because of the potential physical problems of maintenance, moisture-proofing, etc., there is some debate about whether frescoes were actually put there, but on balance it seems they were (see the reconstructed view in [Figure 15.4](#)). Today there are many traces of stucco, but it has been assumed that the stucco derives from the medieval period, when the temple was converted into a church. Future research on the chemical composition and date of the stucco may yield more definitive answers.

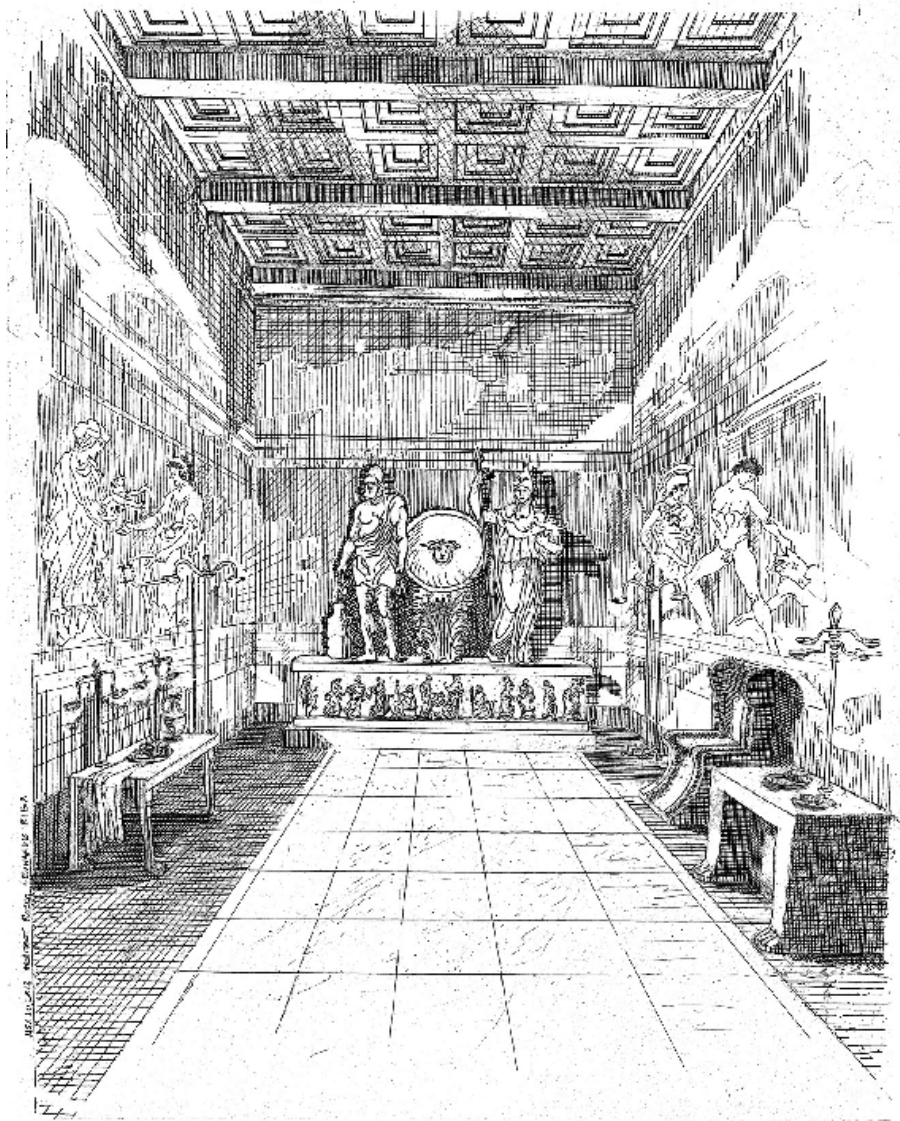


Figure 15.4 Athens, Hephaisteion, interior reconstruction, drawn by Rocco Leonardis.

Source: M.M. Miles.

The custom of dedicating small *pinakes* for the interiors is well-attested in epigraphical and literary sources. In Athens, priestesses of Demeter, for example, were allowed to set up painted portraits of themselves. Such honorary portraits in the form of statuary have been found for many sanctuaries in Greece, ranging in date from the fourth century BCE through the Roman period (Connelly 2007: 117–163). In Greek sanctuaries in Asia Minor in particular, female philanthropy was channeled into refurbishing sanctuaries or making additions to them, and the philanthropic efforts were

recognized with portraits of donors, either painted or sculpted, dedicated in the temples or immediate environs (van Bremen 1996).

Dedicatory statues in sanctuaries were so numerous they could be regarded almost as a “second population” in the sanctuaries. The placement of such offerings is not clear (although some were seen and described by Pausanias as extant when he visited, often located within temples), but inscriptions record efforts by priests and other officials of the sanctuary to control the placement of such dedications. An inscription dated to the second century BCE, from Athens, regulates the placement of dedications, specifically forbidding the overshadowing of cult statues (Sokolowski 1969: pp. 79–80, no. 43). The same inscription also states that dedications that have either violated regulations or are no longer worthy of the sanctuary are to be moved to a stoa by the priest. Another example is a warning carved on the wall of a cave sanctuary at Lorymna, Rhodes, which reads: “Do not carry dedications out of the sanctuary, do not harm or move the pinakes around or bring in others without the priest” (Sokolowski 1955: 172–173, no. 74).

Furnishings

Furniture inside temples is well-attested archaeologically, epigraphically, and in literary accounts (Andrianou 2006a, 2006b). Whether such offerings were intended exclusively for the deity, or to be used by the god’s priest or priestess, or by devotees during periodic rituals are distinctions difficult to determine, but comfort and storage seem to be the two main goals. Anything dedicated, presumably, became the legal possession of the deity. This included the temple itself and individual architectural blocks (Miles 2011). Marble thrones, often inscribed, have been found inside temples at Rhamnous and the Temple of Apollo on Cape Zoster in Attica and several other sanctuaries (Figure 15.5).



Figure 15.5 Temple of Apollo at Cape Zoster, view of interior.

Source: M.M. Miles.

Temple inventories from Athens, Brauron, and Delos list a broad array of furniture types, including containers: chests, baskets, and boxes, strongboxes, thrones, and stools, footstools, bed-couches, and many sorts of tables. There are curtains and veils, tapestries, pillows, coverings, cushions, and rugs. Artistic items such as ivory models, pinakes with drawn or painted decoration, and silver tables are attested, as well as ordinary-sounding washbasins and pitchers (discussed in Andrianou 2006b).

Some pieces, such as the Chest of Kypselos described by Pausanias (5.17.5) in great detail, were clearly exquisite works of art in their own right. The chest was made of cedarwood and was decorated with a series of mythological narratives composed of inset figures made of ivory and gold. A unique furnishing is attested for the Erechtheion: an ever-burning oil-lamp dedicated to Athena Polias, with a chimney in the shape of a palm-tree, stood somewhere inside the temple, presumably close to a window so the smoke could escape. It was made by the fifth-century BCE sculptor Kallimachos, possibly the same Kallimachos credited with inventing the Corinthian order (Pausanias 1.26.6; Palagia 1984).

Dedicated Vessels, Money, and Gold

Another common form of dedication usually kept in temples is vessels either dedicated for their precious metal or to be used in rituals, or both. Extensive temple inventories exist for the Parthenon and for the Sanctuary of Apollo at Delos, along with several other sites (Harris 1995; Hamilton 2000). Items of precious metal were considered part of the deity's treasury and were weighed each year by a committee of magistrates whose responsibility was the proper oversight of the goddess's property. The inventories confirm the impression from scattered literary testimonia that very large quantities of such gold and silver phiales, cups, pitchers, and other dishes were kept in cupboards and on shelves inside temples, and inside the pronaos and opisthodomos. For the Temple of Asklepios on the south slope of the Athenian Acropolis, we have exact locations given: some items were nailed to ceiling beams or hung on the walls (Aleshire 1989: 37–51; 1991, pl. 11).

How such offerings could appear to Athenians is well-illustrated by Thucydides' account of a diplomatic visit to Segesta in western Sicily (Thuc. 6.46). The Athenian party, including sailors, was dazzled by the huge quantity of accumulated vessels and other precious offerings in the Temple of Aphrodite at Eryx, but the display was mostly silver, grumps Thucydides. Later the Segestans entertained their guests with borrowed plate passed each night from house to house. The Athenians went away duped, thinking the Segestans were very wealthy indeed, but in fact, they really did not have the resources to pay for the proposed Athenian military venture.

Gold in the form of artistic objects (such as sheaves of wheat in the Parthenon) is listed in temple inventories as part of the sanctuaries' holdings. On the eve of the Peloponnesian War, Thucydides has Pericles remark on the 44 talents of gold used for the drapery of the chryselephantine Athena Parthenos as a back-up reserve that the Athenians could use for wartime expenses if they were in dire need. Presumably if the gold were melted down, it could be replaced in better times. Altogether, Pericles is said to have remarked that there were some 6,000 talents of coined money along with unstamped gold and silver dedications, plus the gold drapery (Thuc. 2.13).

Coined money (in circulation generally in most parts of the Greek world by at least circa 500 BCE, and in some areas much earlier) was an important component of the holdings in many temples, for one role of a major temple in a city was to serve as the central authority for the city's treasury. Coined money became part of a sanctuary's assets, and after maintenance and other needs of the sanctuary were taken care of, the money could be loaned, at interest, as for example on Nemesis' behalf in the Temple of Nemesis at Rhamnous in the mid-fifth century BCE (*IG* I³ 248). Such monies were carefully accounted (Davies 2001). In fifth-century BCE Athens, the *aparchai* to Athena (first-fruits, consisting of one-sixtieth of the tribute to Athens) was

listed by donors on a series of very large stelai set up on the Acropolis, referred to as the *Athenian Tribute Lists*. Athena retained this money since the overall treasury was in her keeping on the Athenian Acropolis, where it had been moved in 454 BCE after the initial start of the Delian League on Delos, then under the protection of Apollo. Athens was not peculiar in using temples as banks; this was a widespread practice in the Greek world.

Temples as Museums

A rich source of information about the contents of one temple is given by the Lindian Temple Chronicle, an inscription set up around 99 BCE that records the contents of the temple of Athena Lindos before a fire occurred, in which many, if not most, of the dedications perished (Higbee 2003; Shaya 2005). It was a remembered accounting, positing a historical collection, now lost, which included such notable items as an inscribed bronze cauldron dedicated by Kadmos, bracelets of Helen, a cup of King Minos, and weapons dedicated by Alexander the Great. The inscription has a format similar to other temple inventories, but it also includes an account of epiphanies and assistance of Athena at crucial times when the city was in peril, such as a siege by the Persian general Datis, sent by King Darius, which he lifted after the goddess intervened by sending a rainstorm (and he then sent dedications to the temple, listed). Many other temples are known to have had collections of historical or commemorative relics (Pfister 1909).

Readers of Pausanias will recall many legendary or historical items he saw in temples, usually associated with specific events, such as the Trojan War, or the Persian invasions (Arafat 2009). The tusks of the Kalydonian boar that were in the Temple of Athena Alea at Tegea had been carried off by Augustus (and one of the pair was in the Forum of Augustus in Rome), but Pausanias was able to see the hide of the boar hanging inside the temple, very worn, with no bristles attached (8.45–47). In Athens, the Erechtheion (Temple of Athena Polias) was an important repository, and there Pausanias was shown a range of relics:

In the temple of Athena Polias is a wooden Hermes, said to have been dedicated by Cecrops, but not visible because of myrtle boughs. The votive offerings worth noting are, of the old ones, a folding chair made by Daedalus, Persian spoils, namely the breastplate of Masistius, who commanded the cavalry at Plataea, and a scimitar said to have belonged to Mardonius.”

(1.271, trans. W. Jones, Loeb ed.)

Some items inside temples fall into a category of “curiosities,” such as a giant stalk of bamboo that was dedicated inside the Temple of Athena at Syracuse,

mentioned by Cicero in his prosecution of the Roman governor Verres for extortion (Cic. *Verr.* 2.4.125). Cicero also notes a series of historical paintings of 27 rulers of Syracuse inside the temple, taken by Verres, and figured door panels made of gold and ivory on the temple's main door, wrenched off by Verres (2.4.123–124). By far the most common offerings, however, seem to have been arms, armor, and chariot wheels as well as other ordinary, everyday items that nonetheless were important to those who dedicated them.

Security

Because they contained such valuable items, and indeed, sometimes held city treasuries, basic security from casual theft was a concern. Dowel-holes on columns, antae, and pavements in many temples indicate the installation of metal grilles in the intercolumniations of the pronaos and opisthodomos. Magistrates were charged each year with weighing and counting the valuables at Delos, Athens, Brauron, and other sanctuaries and were held accountable for their safety. In some places, such as Athens, staff were on patrol: the *Athenaion Politeia* mentions 50 archers stationed on the Athenian Acropolis ([Arist.] *Ath. Pol.* 24.3). A few sanctuaries had high walls that offered protection (Gawlinski 2015).

But, above all, the sanctity of the temples as the “homes” of deities, and the legal fact that the contents belonged to the deity, offered the best protection. Apart from the Persian invasions, when temples were looted and burned, that protection apparently lasted a long time (Miles 2014). The typical security measures in place in the sanctuaries were no match against armies or organized, armed looters, however. Dionysios I of Syracuse was accused of looting sanctuaries in southern Italy to pay for mercenaries, circa 400 BCE. In 356 BCE, the Phokians shocked the Greek world by looting Delphi of many of its gold dedications, which they then melted down to pay mercenaries. One of the items they melted was the gold tripod dedicated by the citizens of 31 Greek cities who fought the Persians and won at Plataia in 479 BCE. The huge amounts said to have been looted on these occasions could only have accumulated over a long period when such offerings were safe and untouched (Davies 2007; Miles 2008: 30–44).

Rituals inside Temples

Most of the typical rituals of ablutions, libations, sacrifice, and other offerings to the deity took place outside the temple. The altar, typically located to the

east of the temple, was the culmination for processions, and the focal point for sacrifices, particularly animal sacrifices (for sacrifice of cattle, see Ekroth 2014, McInerney 2014), and for singing hymns (Furley and Bremer 2001: 28–35). But performances could be extended to the peristyle or even inside the temples (e.g. Paus. 3.26.10, 6.20.3), and some temples are known to have had altars inside, as did the Erechtheion, with altars for Poseidon and Erechtheus, for Boötes, and for Hephaistos, perhaps located inside the east colonnade. Before the entrance was an altar to Zeus Hypsistos, for vegetarian offerings of cakes only, no animal sacrifice or even wine (Paus. 1.26.5). Inside some early Archaic temples on Crete and elsewhere, hearths for burned offerings have been excavated, and from them we infer that the roofs of those temples must have had a chimney or at least an opening for the smoke to escape. As noted above, people prayed to deities inside the temples and while standing close up to them, even touching them. At Eleusis, the Temple of Demeter and Kore (often referred to as the Telesterion) was specifically designed to accommodate large numbers of people for the rites of initiation that comprised the Eleusinian Mysteries (see [Chapter 13](#)).

A few accounts are preserved of very strange rituals that were carried out inside a temple: one of them is Pausanias' description of what happened inside the Temple of Demeter Chthonia at Hermione in the Argolid. First he describes a normal procession of priests and townspeople, including children, and then the extraordinary sacrifice inside the temple (2.35.5–8):

Those who form the procession are followed by men leading from the herd a full-grown cow, fastened with ropes, and still untamed and frisky. Having driven the cow to the temple, some loose her from the ropes that she may rush into the sanctuary, others, who hitherto have been holding the doors open, when they see the cow within the temple, close the doors. Four old women, left behind inside, are they who dispatch the cow. Whichever gets the chance cuts the throat of the cow with a sickle. Afterwards the doors are opened, and those who are appointed drive up a second cow, and a third after that, and yet a fourth. All are dispatched in the same way by the old women, and the sacrifice has yet another strange feature. On whichever of her sides the first cow falls, all the others must fall on the same. Such is the manner in which the sacrifice is performed by the Hermionians. Before the temple stand a few statues of the women who have served Demeter as her priestess, and on passing inside you see seats on which the old women wait for the cows to be driven in one by one, and images, of no great age, of Athena and Demeter. But the thing itself that they worship more than all else, I never saw, nor yet has any other man, whether stranger or Hermionian. The old women may keep their knowledge of its nature to themselves.

(2.25.5–8, trans. W. Jones, Loeb ed.)

Pausanias himself was evidently an eyewitness to this highly unusual ceremony, which therefore should date to the second century CE. His account presents a series of reversals: the cows are sacrificed inside rather than outside the temple (the messiness of this procedure may be imagined); the sacrifice is conducted by old women, with sickles, rather than male priests, with knives. The image of Demeter may be seen only by the four old women, not the public. In other ways Pausanias highlights the “normal” aspect of the rituals (such as the procession of townspeople), and of the sanctuary, with portrait statues of priestesses, and seats for the women inside the temple.

Visitors

The action in Euripides’ play *Ion*, composed between 414 and 412 BCE, begins with a scene of Ion sweeping the steps of the Temple of Apollo at Delphi. The chorus, a group of female attendants of Kreusa (probably slaves) just come from Athens, remark on the sculpture of the temple, and they ask Ion if they may enter. He says only those who have performed a sacrifice and wish to consult the oracle may enter. In general, people (slave or free, male or female, adult or child, citizen or non-citizen) could enter temples and expected to be able to do so. There were exceptions, temples for one sex only, or for people of specific ethnic background only, or those which were open only certain times of year; some sanctuaries were exclusive to initiates, even though initiation itself was open to most, with few qualifying restrictions (understanding Greek, not having committed a blood crime). Nonetheless general accessibility to the public is a characteristic of Greek sanctuaries, in contrast to Egyptian temples or temples in the Near East, which were highly exclusive.

Additionally, some sanctuaries became known as places of refuge for those under pursuit for legal charges or in danger of retaliation of some sort, who could become suppliants at the altar or inside the temples (Sinn 1993). In an episode set in the mid-sixth century BCE, debate over a politically difficult suppliant leads to a consultation of the oracle of Apollo at Branchidai (Miletos); birds nesting in the sanctuary are used as analogs for the suppliant, and the god advises the petitioners never again to ask about surrendering suppliants (Hdt. 1.159). Spartan helots (slaves) could take refuge at the Sanctuary of Poseidon on Cape Tainairon. The Sanctuary of Athena Alea at Tegea became well known as a place of refuge: after the Temple of Hera at Argos burned down because of her negligence, the priestess Chrysis fled first to Phleious (Thuc. 4.133.2–3) and later to Tegea. Pausanias says that Tegea was admired in his own time for daring to harbor two Spartan kings, Leotychides II (in 476 BCE, Hdt. 6.72), and Pausanias II in the early fourth century BCE (Xen. Hell. 3.5.25; Paus. 2.17.7, 3.5.6, 3.7). (in 476 BCE, Hdt.

6.72) and Pausanias II in the early fourth century BCE (Xen. *Hell.* 3.5.25; Paus. 2.17.7, 3.5.6, 3.7).

Prohibitions on behavior and dress in temples and sanctuaries are documented in inscriptions, some of them apparently set up near the entrances. One set up on the Athenian Acropolis, now referred to as the Hekatompedon inscription (*IG I³ 4*), regulates the use of fire (for cooking) by priestesses on the Acropolis and the disposition of dung, and forbids the presence of dogs. Some prohibitions were not necessarily spelled out but were expected to be generally observed. The Boeotians complained to the Athenians about their occupation of the Sanctuary of Apollo at Delion during the Peloponnesian War (in 424/3 BCE), specifically that they were living in the sanctuary and using the sacred spring in a profane way (Thuc. 4.97).

Within the temenos around the main temple in sanctuaries typically one would find sacred groves, perhaps special animals (such as a herd of cows sacred to Hera at Croton, or peacocks in her sanctuary on Samos) along with birds and other wild animals: people and animals were an integral part of evoking sacrality. Temple interiors served as banks, as museums, as a repository for commemorative items – both communal and personal – and thus they became the nucleus for forming local civic and familial identity and fostered communal memory. Greek architecture requires people for scale against its abstract forms and should be visualized thronged with visitors. Temples were by far the most colorful element in the built environment, and their interiors attracted people who wanted to visit the deity represented by the cult statue.

FURTHER READING

The essays by P. Corbett (1970) and Burkert (1988) are still fundamental for this topic and provide general overviews. On cult images, see Kroll 1982, Romano 1982, van Straten 1981 and 2000 and Kosmopoulou 2002, with Mylonopoulos 2011 on access to the images and Platt 2011 on responses to images. For archaeoastronomy, see Boutsikas and Ruggles 2011 and the essays in Ruggles 2015. For temple inventories, see Aleshire 1989, Harris 1995, Hamilton 2000, and Higbee 2003. On temples as museums, see Bounia 2004 and Shaya 2005.

REFERENCES

Aleshire, S. 1989. *The Athenian Asklepieion: the People, their Dedications, and the Inventories*. Amsterdam.

Andrianou, D. 2006a. “Chairs, Beds and Tables: Evidence for

Furnished Interiors in Hellenistic Greece.” *Hesperia*, 75: 219–266.

Andrianou, D. 2006b. “Late Classical and Hellenistic Furniture and Furnishings in the Epigraphical Record.” *Hesperia*, 75: 561–584.

Arafat, K.W. 2009. “Treasure, Treasuries and Value in Pausanias.” *Classical Quarterly*, 59: 578–592.

Bankel, H. 1993. *Der spätarchaische Tempel der Aphaia auf Aegina*. Berlin.

Barringer, J. and J. Hurwit, eds. 2005. *Periklean Athens and its Legacy: Problems and Perspectives*. Austin.

Bell, M. 1980. “Stylobate and Roof in the Olympeion at Akragas.” *AJA*, 84: 359–372.

Berger, E., ed. 1984. *Parthenon-Kongress Basel*. Mainz.

Bounia, A. 2004. *The Nature of Classical Collecting: Collectors and Collections, 100 BCE–100 CE*. Aldershot.

Boutsikas, E. 2007–2008. “Placing Greek Temples: An Archaeoastronomical Study of the Orientation of Ancient Greek Religious Structures.” *Archaeoastronomy*, 21: 4–19.

Boutsikas, E. 2015. “Greek Temples and Rituals.” In Ruggles, ed., 1573–1581.

Boutsikas, E. and C. Ruggles. 2011. “Temples, Stars, and Ritual Landscapes: The Potential of Archaeoastronomy in Ancient Greece.” *AJA*, 115: 55–68.

Burkert, W. 1988. “The Meaning and Function of the Temple in Classical Greece.” In Fox, ed., 27–47.

Buxton, R., ed. 2000. *Oxford Readings in Greek Religion*. Oxford.

Campbell, G.L., ed. 2014. *The Oxford Handbook of Animals in Classical Thought and Life*. Oxford

Carter, J. 1983. *The Sculpture of the Sanctuary of Athena Polias at Priene*. London.

Cole, S.G. 2004. *Landscapes, Gender, and Ritual Apac: The Ancient Greek Experience*. Berkeley.

Connelly, J.B. 2007. *Portrait of a Priestess*. Princeton.

Cooper, F. 1996. *The Temple of Apollo Bassitas: The Architecture*. Vol. 1. Princeton.

- Corbett, P.E. 1970. "Greek Temples and Greek Worshippers: The Literary and Archaeological Evidence." *BICS*, 17 (1): 149–158.
- Daly, K. and L.A. Riccardi, eds. 2015. *Cities Called Athens*. Lewisburg
- Davies, J.K. 2001. "Temples, Credit, and the Circulation of Money." In Meadows and Shipton, eds., 117–128.
- Davies, J.K. 2007. "The Phokian Hierosylia at Delphi: Quantities and Consequences." In Sekunda, ed., 75–96.
- de Polignac, F. 1995. *Cults, Territory, and the Origins of the Greek City-State*. Translated by J. Lloyd. Chicago.
- Despinis, G. 2007. "Neues zu der spätarchaische Statue des Dionysos aus Ikaria." *MDAI(A)*, 122: 103–137.
- Ekroth, G. 2014. "Animal Sacrifice in Antiquity." In Campbell, ed., 324–354.
- Elsner, J. 1996. "Image and Ritual: Reflections on the Religious Appreciation of Classical Art." *CQ*, 46: 515–531.
- Fox, M.V. ed. 1988. *Temple in Society*. Winona Lake.
- Furley, W.D. and J.M. Bremer. 2001. *Greek Hymns: Selected Cult Songs from the Archaic to the Hellenistic period*. 2 vols. Tübingen.
- Gardeisen, A. and C. Chandezon, eds. 2014. *Equidés et bovidés de la Méditerranée antique: Rites et combat. Jeux et savoirs*. Lattes.
- Gawlinski, L. 2015. "Securing the Sacred: The Accessibility and Control of Attic Sanctuaries." In Daly and Riccardi, eds., 61–87.
- Hamilton, R. 2000. *Treasure Map: A Guide to the Delian Inventories*. Ann Arbor.
- Harris, D. 1995. *The Treasures of the Parthenon and Erechtheion*. Oxford.
- Haysom, M. and J. Wallensten, eds. 2011. *Current Approaches to Religion in Ancient Greece*. Stockholm.
- Higbie, C. 2003. *The Lindian Chronicle and the Greek Creation of their Past*. Oxford.
- Hollinshead, M.B. 1999. "'Adyton,' 'Opisthodomos,' and the Inner Room of the Greek Temple." *Hesperia*, 68: 189–218.
- Hurwit, J. 2005. "The Parthenon and the Temple of Zeus at Olympia." In Barringer and Hurwit, eds., 135–145.

Hurwit, J. 2014. "The Lost Art: Early Greek Wall and Panel Painting, 760–480 b.c.," In Pollitt, ed., 66–93.

Kelly, N. 1995. "The Archaic Temple of Apollo at Bassai: Correspondences to the Classical Temple." *Hesperia*, 64: 227–277.

Korres, M. 1984. "Der Pronaos und die Fenster des Parthenon." In Berger, ed., 47–54.

Kosmopoulou, A. 2002. *The Iconography of Sculptured Statue Bases in the Archaic and Classical Periods*. Madison.

Kroll, J. 1982. "The Ancient Image of Athena Polias." In *Studies in Athenian architecture, sculpture and topography presented to Homer A. Thompson*. *Hesperia*, Suppl. 20: 65–76.

Lapatin, K. 2001. *Chryselephantine Statuary in the Ancient Mediterranean World*. Oxford.

Marinatos, N. and R. Hägg, eds. 1993. *Greek Sanctuaries: New Approaches*. London.

McInerney, J. 2014. "Bouphonia: Killing Cattle on the Acropolis." In Gardeisen and Chandezon, eds., 113–124.

Meadows, A. and K. Shipton, eds. 2001. *Money and Its Uses in the Ancient Greek World*. Oxford.

Miles, M.M. 1998/1999. "Interior Staircases in Western Greek Temples." *MAAR*, 43/44: 1–26.

Miles, M.M. 2008. *Art as Plunder: The Ancient Origins of Debate about Cultural Property*. Cambridge.

Miles, M.M. 2011. "The *Lapis Primus* and the Older Parthenon," *Hesperia*, 80: 657–675.

Miles, M.M. 2014. "Burnt Temples in the Landscape of the Past." In Pieper and Ker, eds., 111–145.

Mylonopoulos, J. 2011. "Divine Images Behind bars: The Semantic of Barriers in Greek Temples." In Haysom and Wallensten, eds., 269–291.

Nick, G. 2002. *Die Athena Parthenos: Studien zum griechischen Kultbild und seiner Rezeption*. Mainz.

Palagia, O. 1984. "A Niche for Kallimachos' Lamp?" *AJA*, 88: 515–521.

Pedersen, P. 1989. *The Parthenon and the Origin of the Corinthian Capital*. Odense.

Pfister, F. 1909. *Die Reliquienkult im Altertum*. Geissen.

Pieper, C. and J. Ker, eds. 2014. *Valuing the Past in the Greco-Roman Past*. Leiden.

Platt, V. 2011. *Facing the Gods: Epiphany and Representation in Graeco-Roman Art, Literature and Religion*. Cambridge.

Pollitt, J.J. 1990. *The Art of Ancient Greece: Sources and Documents*. Cambridge.

Pollitt, J.J., ed. 2014. *The Cambridge History of Painting in the Classical World*. Cambridge.

Pope, S. and P. Schultz. 2014. "The Chryselephantine Doors of the Parthenon." *AJA*, 118.1: 19–31.

Romano, I. 1982. "The Archaic Statue of Dionysos from Ikarion." *Hesperia*, 51: 398–409.

Ruggles, C.L.N., ed. 2015. *Handbook of Archaeoastronomy and Ethnoastronomy*. 3 vols. New York.

Salt, A.M. 2009. "The Astronomical Orientation of Ancient Greek Temples." *PloS one*, 4 (11): e7903.

Scheer, T.S. 2000. *Die Gottheit und ihr Bild: Untersuchungen zur Funktion griechischer Kultbilder in Religion und Politik*. Munich.

Schultz, P. and B. Wickkiser. 2010. "Communicating with the Gods in Ancient Greece: The Design and Functions of the 'Thymele' at Epidauros." *International Journal of Technology, Knowledge and Society*, 6: 143–164.

Seidel, Y. 2009. *Künstliches Licht im individuellen, familiären und öffentlichen Lebensbereich*. Vienna.

Sekunda, N., ed. 2007. *Corolla Cosmo Rodewald*. Akanthina Vol. 2. Gdansk.

Shaya, J. 2005. "The Greek Temple as Museum: The Case of the Legendary Treasure of Athena from Lindos." *AJA*, 109: 423–442.

Sinn, U. 1993. "Greek Sanctuaries as Places of Refuge." In Marinatos and Hägg, eds., 88–109.

Sokolowski, F. 1955. *Lois sacrées de l'Asie Mineure*. Paris.

Sokolowski, F. 1969. *Lois sacrées des cités grecques*. Paris.

Stansbury-O'Donnell, M. 2014. "Reflections of Monumental Painting in Greek Vase Painting in the Fifth and Fourth Centuries b.c." In Pollitt, ed., 143–169.

Steiner, D.T. 2001. *Images in Mind: Statues in Archaic and Classical Literature and Thought*. Princeton

Stevens, G.P. 1955. "Remarks upon the Colossal Chryselephantine Statue of Athena in the Parthenon." *Hesperia*, 24: 240–276.

Tanke, K. 1989. *Figuralkassetten griechischer und römischer Steindecken*. Frankfurt.

van Bremen, R. 1996. *The Limits of Participation: Women and Civic Life in the Greek East in the Hellenistic and Roman Periods*. Amsterdam.

van Straten, F.T. 1981. "Gifts for the Gods." In Versnel, ed., 65–104.

van Straten, F.T. 2000. "Votives and Votaries in Greek Sanctuaries." In Buxton, ed., 191–223.

Versnel, H.S., ed. 1981. *Faith, Hope, and Worship: Aspects of Religious Mentality in the Ancient World*. Leiden.

Wikander, O. 1983. "OPAIA KERAMIS, Skylight-tiles in the Ancient World." *Opuscula Romana*, 14: 81–99.

Winter, F.E. 1982. "Tradition and Innovation in Doric Design IV: The Fourth Century." *AJA*, 86: 387–400.

CHAPTER 16

Scale, Architects, and Architectural Theory

John R. Senseney

Along with Ionian abstract thinkers like Anaximander in the sixth century BCE, Archaic architects were the earliest Greek prose writers. Whereas Anaximander and others wrote about the nature of the universe, architects like Theodoros, Chersiphron, and Metagenes wrote about their discoveries and successes in the sphere of building construction. Following the recording of their mastered feats, architects' activities in the realms of writing and building began to focus on more design-related concerns. This shift coincided with – though need not have depended on – the conception of Plato's *theoria*, adopted as a metaphor from a term relating to rituals of spectacle, thereby creating a descriptor for the disembodied philosophical and scientific envisioning of realities not readily seen. In the theory of Hellenistic architects focused on questions of design, there developed an interest in scale, which enabled the design of buildings through graphic means for the envisioning of buildings from the abstract, disembodied aerial view of ground plans. With extensive reference to the Didymaion, the present chapter explores scale planning in Hellenistic architectural theory as reflected in Vitruvius. As detailed below, the theoretical processes and principles underlying scale design developed first in traditional methods of construction that preceded the common application of reduced scale in the art of building, which was unlikely to have taken place prior to Hermogenes in the later third century BCE.

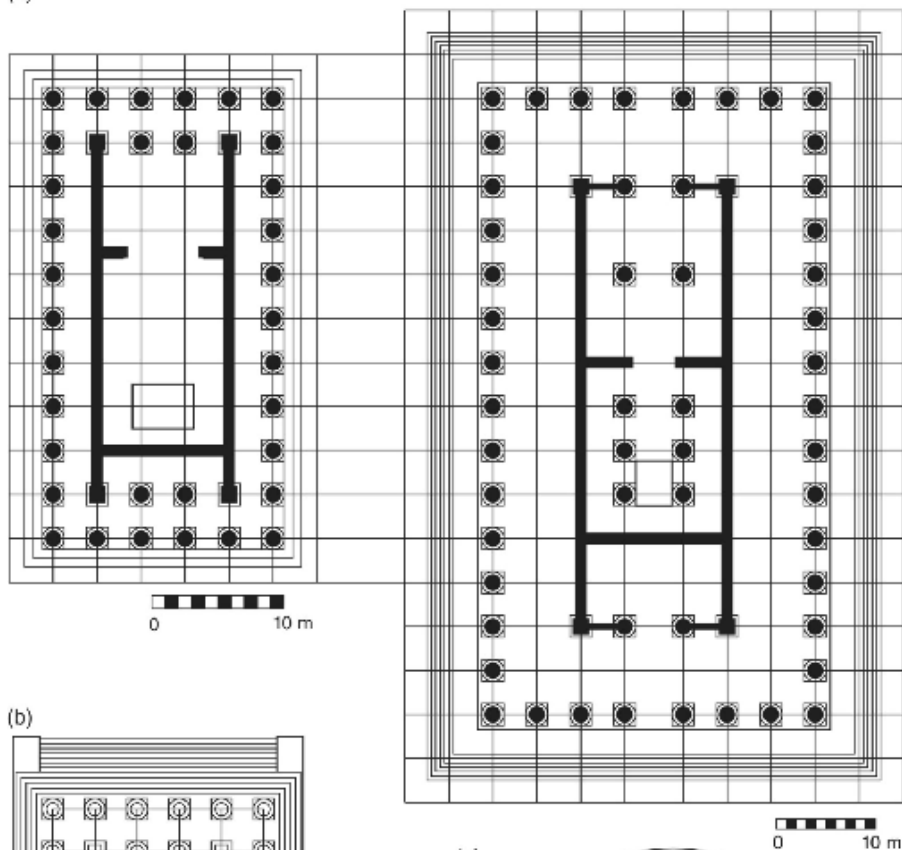
Scale Representation, Vision, and Architects

Three-dimensional models do not figure prominently in the question of scale in Greek architectural practice and theory. Plastic models of temples were common, but known examples appear to be limited to funerary objects, votive items, and dedications (Haselberger 1997: 83–87). These were not models in the sense of aids in the planning and construction process, and were therefore neither to scale nor germane to the activities of architects. The *paradeigmata* of architects, rather, were full-scale models of individual features (Coulton 1977: 55–58). Only the scantest evidence for reduced-scale models pertains to the Roman period, reflecting practices that it is likely were not well spread

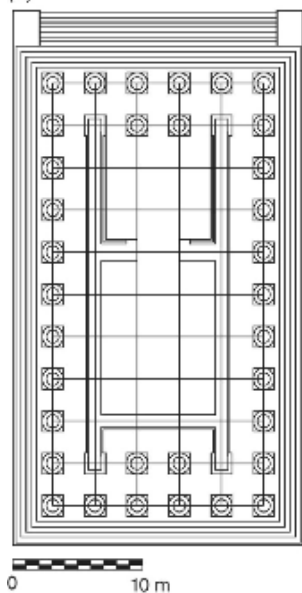
and were derivative of scale *graphic* models that originated in the Greek world (Senseney 2011b: 441; Senseney 2014).

Scale graphic models were not likely to have been employed by architects until a relatively late date (Coulton 1977: 70–71). In the realm of engineering, it has been proposed that, in the sixth century BCE, Eupalinos planned his tunnel at Samos with a scale drawing based on a precise calculation of the distance to be transversed through the mountain (Kienast 1995: 164–172; Hahn 2001: 115–116). Yet this suggestion is questionable, and it is more likely Eupalinos need not have ever envisioned his tunnel according to a scale plan, instead employing a multistage process to ensure convergence (see [Chapter 5](#)). As with three-dimensional models, rather, graphic practices in the Archaic period were limited to full-scale planning processes, as in the use of radial drawings on the flat surfaces of column drums in order to arrange the pattern of fluting around the profiles of shafts (Schwandner 1985: 26–29, 67–72). The earliest plausible candidate for a temple building designed according a scale ground plan is Pytheos' Temple of Athena Polias at Priene from around 340 BCE ([Figure 16.1](#)), in which the modular character and equal spacing of features appears to reflect a gridded, graphic underpinning (Coulton 1977: 70–71; Senseney 2011a: 153–158).

(a)



(b)



(c)

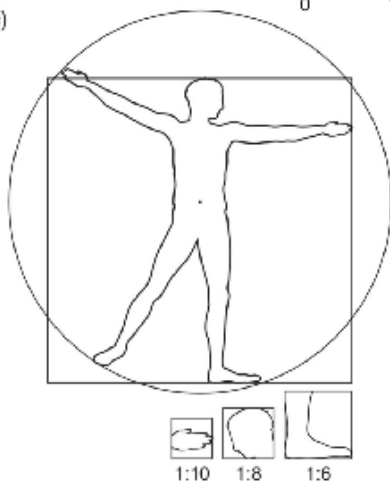


Figure 16.1 Restored ground plans of Ionian temples with “Vitruvian Man” as theoretical embodiment of modular, reduced-scale design. (a) Comparison of temples by Pytheos (Temple of Athena Polias, Priene, Late Classical, around 340 BCE) and Hermogenes (Artemision, Magnesia-on-the-Maeander, Hellenistic, around 220 BCE). (b) Temple of Dionysos, Teos, by Hermogenes, Hellenistic, third century BCE. (c) “Vitruvian Man.”

The introduction of reduced-scale representation in architecture involved a transition from visual projection in real space to a different kind of vision. When Eupalinos set out to tunnel through Mount Kastro, he may have used a simple sighting tube for purposes of leveling (Lewis 2001: 214–216). Through directed projections of visual axes across space, the level tube became both instrument and model, shaping the tunnel as a large-scale axis through the earth. In the following centuries, the idea of visual projection would come to shape the excavated hollows of hillsides for theaters. Replacing rectilinear theaters, the circular, radial arrangement adapted the same graphic construction for linear perspective (*skenographia*) as found in painted backdrops, emphasizing the role of the *theatron* as a communal space for vision (*thea*) in a form that anticipated Euclid’s *Optics*, with its geometric understanding of how visual rays project. The transition to radial theaters may have occurred as early as the later fifth century BCE at the Theater of Dionysos in Athens, although the seating rows may have been straight rather than curved in this precursor to the present all-stone version that replaced it some decades later (Goette 1993: 50–51). In the earlier version, the result may have been a radial auditorium that was technically polygonal rather than circular, imitating familiar compass-drawn forms while simplifying them for construction purposes (see [Chapter 25](#)).

This loose relationship between graphic and built forms may suggest that Greek theaters need not have followed scale plans in the modern sense of fixed ratios of scale correlating drawings to overall dimensions and metric specifications of features, or in the modular approach of Hermogenes, for example ([Figure 16.1](#)). Arguably, the relationship between drawings and theaters may not have gone beyond the level of the general inspiration of the idea of circular, radial drawings of the type described by the character Meton in Aristophanes’ *Birds* of 414 BCE (*Av.* 992–1020). The actual construction of theaters probably progressed in a more intuitive fashion, with the retaining walls built to the height of the available hillside to support each row rising against the curve of the level below. Just as the tunnel of Eupalinos did not depend on scale drawing, the practice of designing to scale was not, strictly speaking, a prerequisite for the first radial theaters in the fifth and fourth centuries. The earliest evidence for planning buildings according to drawings made to scale must therefore be sought in a different context.

Along with architects, scientists shared in developing the instruments, techniques, and forms of reduced-scale drawing, as well as the very concept of representing space graphically. Around 300 BCE, the first theorem of Euclid’s *Phenomena* finds the earth’s location within the universe by attaching a sighting tube to a pivot in the center of a disk ([Figure 16.2](#)), thereby forming a *dioptra* operated by a *theoros*, or “viewer.” The *theoros* projects visual axes through the sighting tube toward the horizon and the

rising and setting constellations of the revolving cosmos. In this way, the pivoting tube's direction duplicates that of the projected visual rays, correlating the earthbound location of the theoros in the sphere of the cosmos with the pivot at the center of the disk. In a manner similar to the correspondence between the mountain tunnel and the simpler sighting tube, from which the dioptra evolved, the result is a microcosm. Using the compass and straightedge, Euclid illustrates this demonstration in a diagram with radial lines representing the visual axes projecting from a central point, thus indicating the earth's central location in the universe (Figure 16.2). In viewing the small-scale drawing, one may behold the entirety of ordered space from an abstract perspective outside that of the theoros, just as one may view a scale ground plan of a building from the sky above in a disembodied manner. One may therefore ask whether Euclid's theorem reflects existing ways of planning buildings in real space, a prospect that seems obvious in the gridded, modular temples of Hellenistic Ionia.

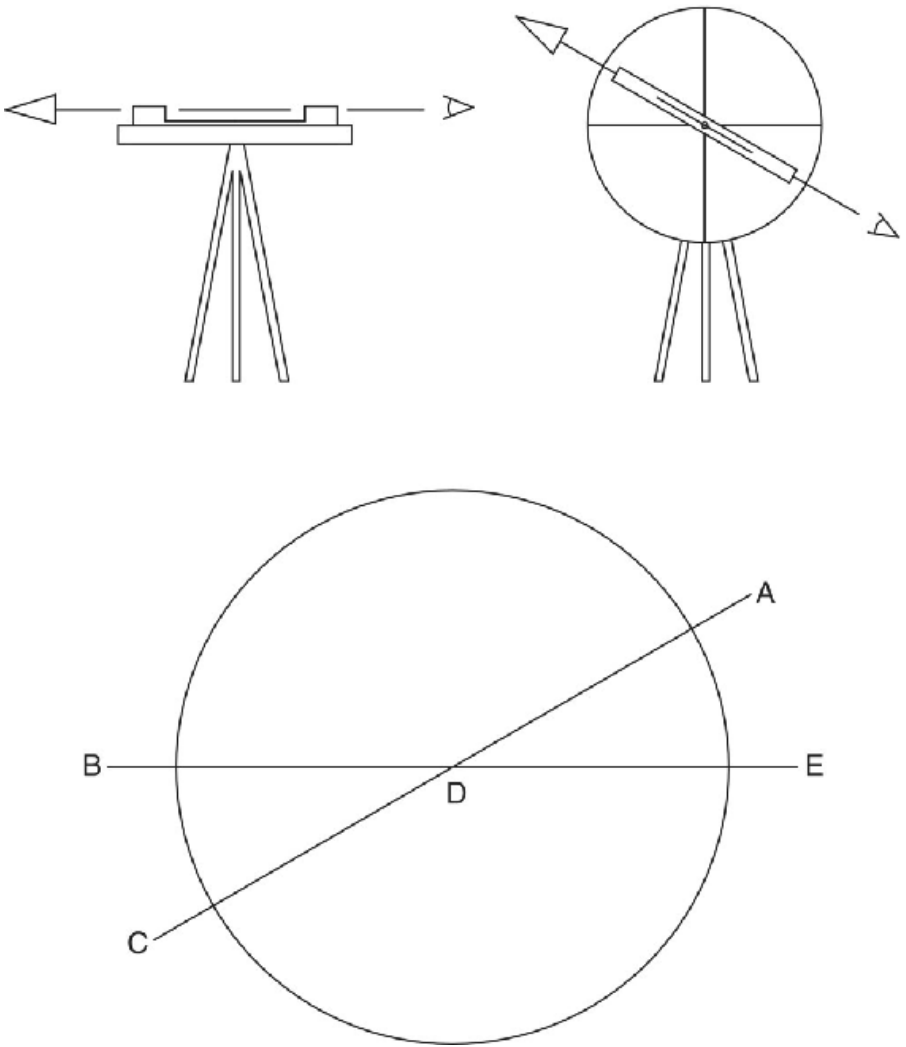


Figure 16.2 Theorem 1 of Euclid's *Phenomena*, around 300 BCE. Above: Schematic reconstruction of the *dioptra* with axes of vision of *theoros* projected through sighting tube in horizontal mode (left) and vertical mode (right). Below: Resulting geocentric diagram with shared axes of vision along setting point of Capricorn (A), rising points of Leo (B) and Cancer (C), earthbound viewer (D), and setting point of Aquarius (E).

Source: J. Senseney.

This question of scale planning is central to Vitruvius' *De architectura* of the 30s–20s BCE. Reflecting the lost body of Greek architectural theory, Vitruvius emphasizes the importance of scale drawings: ground plans, elevations, and skenographia (1.2.1–9). He classifies these as *ideai*, sharing the same Greek term with the Ideas or Forms of Plato, which are the transcendent universals imitated in the embodied forms in nature, analogous

to how built forms imitate the drawings that project them (Senseney 2007: 560; Senseney 2009: 44–45). The term *idea* relates to the infinitive “to see” (ἰδεῖν, aorist infinitive of ὁράω), just as Vitruvius preserves in the Latin translation *species* (from *specio*, “I see”). Thus, related to vision etymologically, the idea is an important component of Plato’s metaphor of *theoria*, a term and associated rituals adopted from the institutionalized witnessing of spectacles, allowing Plato to describe a new kind of seeing necessary to grasp transcendent reality (Nightingale 2005: 40–93). In Vitruvius’ theory, as scale drawings, the *ideai* express a set of processes and principles that define *architectura*, a Latin term first found in Cicero’s writing. *Architectura* does not derive from the Greek noun for the art of building (ἡ οἰκοδομική) in the sense of the “builder” (οἰκόδομος). In a more elevated way, *architectura* derives from the idea of the architect, or “master artificer” (ἀρχιτέκτων). For Vitruvius, this concept extends to nature itself as architect, which creates the mechanisms of the cosmos from which measurable time itself is brought forth (9.1.2, 10.1.4). Similarly, the three departments of *architectura* include not only the art of building, *aedificatoria*, but also the making of timepieces and mechanisms (1.3.1). For architects or a scientist like Euclid, then, scale drawing helps to theorize both buildings and the cosmos through a different kind of vision, revealing them in their totality from an abstract vantage point impossible in everyday seeing. As will be discussed with detailed reference to the Didymaion, the phenomenon of reduced scale in the practice and theory of architects is a Hellenistic Ionian development involving a new relationship between building and time, a development perhaps to be associated most closely with Hermogenes, and less with Pytheos or the architects of the Didymaion.

Construction Phases of the Didymaion

With its surrounding double colonnade and open-air adyton containing a naiskos (Figure 16.3), the Hellenistic–Roman Didymaion repeated the general layout found in its archaic precursor but at a greater scale (Gruben 1963; Schneider 1996). At the back of the pronaos, and inaccessibly raised 1.46 m above the stylobate without a stairway, is the monumental portal of a two-columned room from which prophecies may have been announced. On either side of this portal at the level of the stylobate and below a pair of stairways, two descending, barrel-vaulted tunnels lead down into the adyton. At the east end of the adyton, a wide flight of stairs ascends to the level of the two-columned room (Figure 16.3). The marble socle walls of the adyton maintain their rough finish, and it is this expansive surface that served as a drawing board for various generations of architects to incise their plans as construction

progressed. Built above this unadorned level is a smoothed wall with pilasters projecting at regular distances, the lowest part of which corresponds to the level of the stylobate beyond.



Figure 16.3 Sanctuary of Apollo, Didyma eastward view of the adyton from the naiskos.

Source: J. Senseney.

The construction of the Didymaion took place across several phases. The first phase began sometime between 334 and 300/299 BCE under two architects: Paionios, who had worked at the Artemision at Ephesos prior to arriving at Didyma, and Daphnis, from nearby Miletos (Vitr. *De arch.* 7.praef.16). These figures would have witnessed relatively little of the building's shaping during their own lifetimes, and it is impossible to say how much the outcome reflected their original vision. By around the middle of the third century BCE, the walls of the adyton had been completed up to the level of the stylobate, providing an approximate date for the incised plans for constructing the columns. After this time, construction on the naiskos probably began in the third quarter of the third century BCE (Haselberger 1983: 114–115; Rumscheid 1994: 112–113). Surviving inscribed construction reports placed on public display in Miletos provide much information on the various later stages of the project (Rehm 1958; Voigtländer 1975: 144–149). In the 220s BCE, the construction of features on the eastern stylobate was underway, including walls, plinths, and column drums, as too the temple portal, the antae, and other work in the area of the pronaos. Between the 180s and 150s

BCE, the walls of the pronaos reached their full height; beams were laid; the stylobate was paved with marble slabs; walls and steps were smoothed; and column bases, shafts (fluting), capitals, and other ornaments were carved. The remaining construction, never to reach completion, was to include the paving slabs, plinths, and columns of the double pteron all the way around the stylobate, as well as the skyward features they were to support.

Theory, Nature, and Architecture

The gradual nature of this sequence of construction over several centuries is remarkable. As Marvin Trachtenberg (2010) recently explores with respect to medieval and Renaissance practices, the idea of taking on a major architectural project without having first secured all of the financial, material, and human resources necessary for speedy completion is foreign to modern sensibilities. In the classical world, however, protracted construction in the manner of the Didymaion, the Olympieion at Athens, or the Artemision at Sardis was relatively common outside the major state-sponsored projects of imperial Rome, with its ready supplies of materials, machines, and organized labor force (MacDonald 1982: 143–166). To use Trachtenberg’s characterization, in building work that continues over a significantly long time, involving generations of architects, forms tend to evolve gradually “in time” at various stages of construction, rather than following a unifying design determined “outside time.” In a modern view, such changes corrupt the original vision for a building, resulting in scholarly attempts to unveil a historical building’s lost original plan retrospectively. Given the complete loss of architectural writing before Vitruvius, however, it is difficult to support this view.

Turning to thoughts on architecture by writers other than architects, Aristotle’s observations do not easily align with modern expectations about advance planning. Aristotle observes that the art of building is like all *technai* in that it involves a particular course of reasoning on the part of its makers (*Eth. Nic.* 6.4.3). Such reasoning concerns variables in the process of coming into being: “Art loves chance, and chance, art” (*Eth. Nic.* 6.4.5). In featuring this element of chance, art differs from nature (φύσις), in which changes lead toward an end that is not, strictly speaking, planned, but rather a “final cause” reached through internal processes set in motion. It is the task of the maker to reflect a proper knowledge of nature through grasping its principles, causes, and universals, which he induces through the process of making. As in nature, for Aristotle, the art of building depends not on an authoritative master plan but rather on effective processes and principles (*Eth. Nic.* 6.4.1–6).

One cannot expect Aristotle’s thoughts to universally represent Classical or Hellenistic architectural theory, and Vitruvius’ text may indirectly reflect

alternative views, like those of Plato. The basis for Vitruvius' connection between nature and building is clarified by his definition of *architectura* in terms of its underlying ordering processes and principles, for which he supplies Greek terms (1.2.1–9). These include an alignment between the processes of design in the sense of positioning features (*diathesis*) in accordance with a quantitative ordering (*taxis*), resulting in the principles of good form (*eurythmia*) and modular commensuration (*symmetria*). Vitruvius explicitly identifies these as the processes and principles of which *architectura* consists, and he states that they characterize the *ideai*. In this same spirit, the Divine Craftsman of Plato's *Timaeus* builds order into the world by following models that are specifically eternal in nature, standing outside of the passage of time (Pl. *Ti.* 27d–28a, 28c–29a, 48e–49a). Plato also asserts that, among the various *technai*, the art of building is supreme because of the precision of its craftsmen's tools of measurement, highlighting the mimetic role of construction with respect to the originating models of architects (Pl. *Phlb.* 56b–c).

Yet there is a significant difference between the ideal represented by the Divine Craftsman and actual builders, just as Plato distinguishes between the abilities of the ideal philosopher and actual philosophers such as Socrates (Nightingale 2005: 40–93). As Plato reveals in his *Republic*'s discussion of the diagrams of the mythical craftsman and architect Daedalus, such drawings are like the motions of stars and planets, suggesting the presence of the eternal cosmic model that they imitate but not in fact carrying any ultimate truth in themselves (*Resp.* 529c–e). For Plato, then, such drawings serve as metaphors for the *ideai* as the eternal models underlying the sense of order in nature. The kinds of drawings that Plato would have known include astronomical diagrams of cosmic mechanism based on the zodiac (as in Euclid's later diagram, [Figure 16.2](#)), the similarly circular, radial drawings used in *skenographia*, and – again in a loose way – the design of theaters (Senseney 2011a: 56–59, 65–68). Although not even Plato attaches special philosophical significance to such drawings, the architect's graphic *ideai* that embody the processes and principles of Vitruvius' *architectura* establish the sense of order in buildings in a way that is merely imitated the process of construction. The appeal of this definition of *architectura* to philologically inclined Renaissance architects is obvious. How it may apply to the realities of monumental construction in the classical world prior to Vitruvius, on the other hand, remains open to question (see [Chapter 7](#)).

Metrology and Modularity in the Didymaion

According to Vitruvius, the design of temple buildings should imitate nature's ideal blueprint for the human body (3.1.2–4). To express this ideal, he

describes the so-called Vitruvian Man ([Figure 16.1](#)), in which the compass and straightedge construct a circumscribed, supine body on the plane of the ground precisely in the manner of a reduced scale ground plan (McKewen 2003: 181–182; Senseney 2011a: 142–153). Consistent with Vitruvius’ explanation for the ideal of architecture, the described drawing reflects *taxis*, ordering an arithmetical underpinning for bodily relationships and the circle and square. It also reflects *diathesis*, positioning the parts of the body in accordance with the quantitative and geometric system. As a result, the Vitruvian Man is a unifying plan, conveying the principle of *symmetria* in the whole number relationships of parts to the whole. The specifics of the *symmetria* and the archetypal geometry of the circle and square have enabled the Vitruvian Man to be readily envisioned and graphically constructed by draftsmen in various eras (Wesenberg 2001: 357–380). As the embodiment of theoretical processes and principles identified with Greek terms, the Vitruvian Man may reflect graphic practices of scale planning employed in Ionia, seemingly observable in Pytheos’ Temple of Athena Polias at Priene, Hermogenes’ Artemision at Magnesia-on-the-Maeander (see [Figure 15.3](#)) and Temple of Dionysos at Teos, and the Didymaion ([Figure 16.1](#)).

In terms of this last-mentioned example (see [Figure 5.2](#)), the fact of construction undertaken over a long period of time potentially complicates modern attempts to arrive at a unifying design from analyses of measurements. Over time, different builders might work with different foot units. Despite this complexity, differing interpretations with equally clear pictures of the Didymaion’s design and measurement system have emerged. Noting long ago that the interaxials of the columns on the stylobate (5.296 m) measure 18 Attic feet of 0.2942 m, Armin von Gerkan settled on this unit as the basis for the building’s master plan (1942: 127–150). The core structure (adyton–pronaos) reflects a 1 : 3 ratio. This core structure subdivides into modular units of nine Attic feet that determine the placements of columns (interaxials = 2 units, or 18 Attic feet), resulting in a planned measurement of 99 × 297 Attic feet for the 1 : 3 rectangle.

More recent studies of archaeological and epigraphic evidence leave no doubt that the features of the temple’s elevation carried out from the mid-third century BCE onwards reflect a larger foot unit of 0.2985 m, which easily extends to all features in plan as well (de Zwarte 1994: 115–143; Haselberger 1996: 161–178). The columnar interaxials of 18 Attic feet, therefore, are revised as 17.75 feet in accordance with the larger unit. Recognition of this foot unit enables identification of the modular basis of the plan: the plinths, which each measure nine feet in length and width, equal three square modules of three feet. Like the parts of the body that serve as modules in the Vitruvian Man, the plinths express salient relationships with larger features. Seen in this way, the Didymaion is consistent with the Ionian tradition of the “plan-driven” modular grid identified in works from Pytheos to Hermogenes and

beyond (Wilson Jones 2001: 705). Consistencies such as these are to be expected, since Pytheos published a volume about his temple at Priene, as Hermogenes later would about his temple at Magnesia (Vitr. *De arch.* 7.praef.12).

Yet there remains a perplexing metrological inconsistency at the Didymaion. On the north socle wall of the adyton are the famous working drawings of the mid-third century BCE, incised directly into the masonry. To prepare these surfaces, ancient builders covered them with dark red pigment, against which the nearly white incised drawings read with clarity. Among these are drawings for the monumental columns on the stylobate that planned the profiles of the base moldings and, for the shafts, the dimensions, proportions, fluting, and subtle curvature, known as entasis. These drawings clearly reflect yet another foot measurement, equal to 0.2964 $\pm$ 0.004 m (Haselberger 1980: 193; 1996: 165). As clarified below, this other measurement pertains only to the execution of the drawing and not to the features they plan. Like the plinths on which they stand, the columns are designed in accordance with the 0.2985 m foot. Nonetheless, the undeniable presence of the foot of about 0.296 m validates the possibility that more than a single foot unit may have been used in the building's construction. Because of this, we should perhaps not rule out the relevance of von Gerkan's foot unit of 0.2942 m for the earliest phases of construction, which gives a clean measurement of 99×297 feet for the core structure. In the Didymaion, therefore, at least three separate foot measurements may have been employed over time in the core structure, the drawings, and on the crepis and stylobate.

Beyond questions of metrology, comparison with the spacing and commensurations of features found in the other Ionian temples may suggest the impact of protracted time on the Didymaion's design. With respect to the Didymaion, the temples of Pytheos and Hermogenes differ in their spatial effects. In these buildings, the square plinths share a 1 : 1 ratio with the spaces between them, and the innovative pseudodipteral arrangement of Hermogenes' temple – in which space allows for two surrounding colonnades while the interior ring is eliminated – creates a notable airiness (Wiegand and Schrader 1904: 81–135; Humann, Kohte, and Watzinger 1904: 39–49; Koenigs 1983: 141–144). In the Didymaion, the plinths (about 2.69 m) are slightly larger than their intervening spaces (about 2.61 m), resulting in a denser arrangement. In the temples of Pytheos and Hermogenes, furthermore, the plinths express the module by which all main features throughout the plan are commensurable. Each plinth in the Didymaion equals three square modules, with the modular underpinning extending to the stylobate ($51.13 \times 109.34 \text{ m} = 57 \times 122$ modules) and crepis ($60.13 \times 118.34 \text{ m} = 67 \times 132$ modules) but not to the walls of the core structure encompassing the adyton and pronaos including the antae ($29.17 \times 87.42 \text{ m}$). A possible explanation for this lack of unity in the manner of Pytheos' and Hermogenes' buildings is that

the module associated with the dimensions of the Didymaion's plinths, stylobate, and crepis was determined without regard for the dimensions of the walls of the core structure, which were planned with a different foot unit in an earlier phase. As such, the Didymaion's incomplete modular underpinning may reflect the reality of design as a process that overlaps with construction, unfolding over a long time rather than being crystallized in an immutable master plan finalized in advance.

Scale and Planning

A recent metrological analysis (Senseney 2011a: 189–190) demonstrates that the dimensions of the vertically compressed shaft in the working drawing that generated the entasis of the columns are based on a 3 : 4 : 5 Pythagorean triangle *ABC* (Figure 16.4). This drawing shows an architect's manipulation of scale, beginning with a circular arc *g* drawn as a profile for a shaft represented a full scale horizontally, but at 1 : 16 scale vertically so that each dactyl (equal to one-sixteenth of a foot) represents one foot. In protracting the scale vertically to the full height of the intended built shafts, the circular arc stretches into an elliptical arc that describes the entasis, and the same method may have been applied in the curvature of temple platforms (Figure 16.5). As a rule of technical drawing, the integral commensuration of 3 : 4 : 5 between the base, height, and theoretical hypotenuse of the triangle in the drawing's underpinning ensures the precision of the right angle of its orthogonal sides, providing a basis for orthogonality throughout the entirety of the graphic construction.

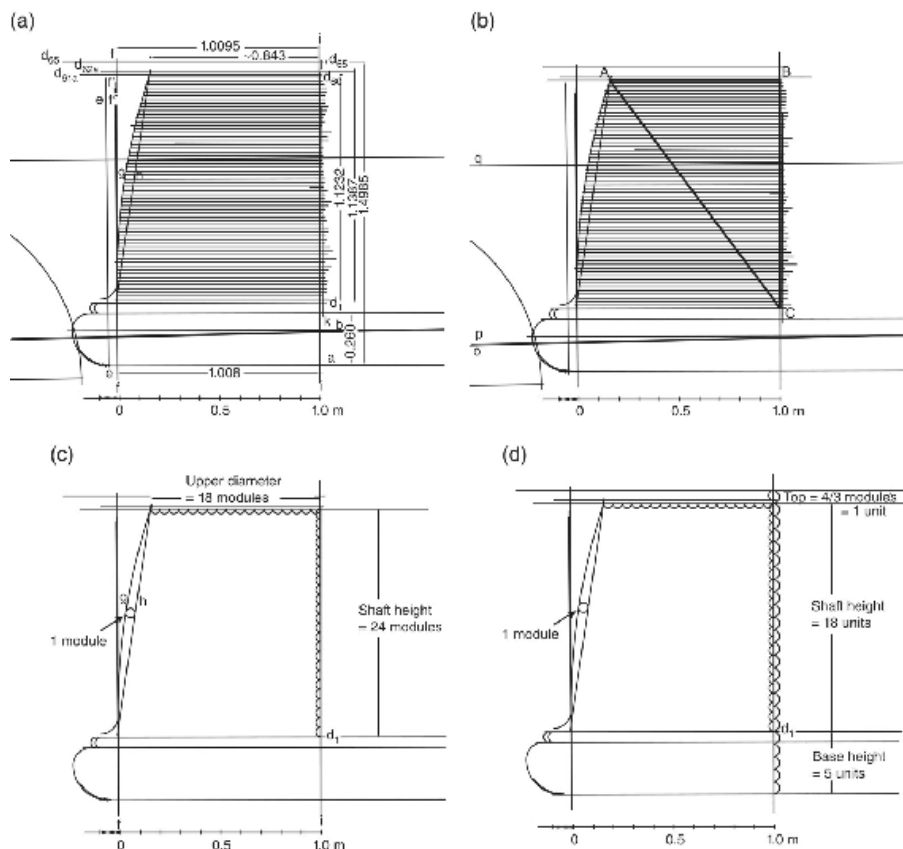


Figure 16.4 Sanctuary of Apollo, Didyma, working drawing for generating entasis. (a) Restored according to L. Haselberger. (b) Shown with underpinning of 3 : 4 : 5 Pythagorean triangle ABC . (c) Shown with modular underpinning, wherein the maximum height of the curve (g) above the line of diminution (h) expresses the module by which the upper column radius and height of the column are measurements of 18 and 24 modules. (d) Shown with modular underpinning established by $d_{65}-d_{62a}$ as the dimension of the maximum curvature of entasis, and $d_{65}-d_{61a}$ as 4/3 of that measurement, establishing the unit by which the divisions of the elevation are established: base = 5, shaft = 18, $d_{61a}-d_{65} = 1$.

Source: J. Senseney, adapted from Haselberger 1980: fig. 1.



Figure 16.5 Temple of Athena Polias, Priene, northward view of stepped platform along west flank with visible curvature.

Source: J. Senseney.

In an interesting way, the three sides of the triangle also share a modular correspondence that is integral to the purpose of the drawing. This triangle is an 18 : 24 : 30 expression of the maximum rise of the curvature, equal to about 4.7 cm. In other words, the architect worked out the degree of entasis as a rational expression of the dimensions in the drawing. This interest in the degree of columnar curvature as a rational value prefigures the spirit of Vitruvius' similar suggestion that a specific feature in the column should determine the amount of the addition for entasis (3.5.14). The module embodied by the maximum curvature helps to organize the logic of the drawing as well. The lines at the top of the drawing above the upper shaft of the column indicate both the size of the module (*d62a–d65*) and a unit equal to four-thirds of the module (*d61a–d65*), so the total height of the drawing divides into 24 units, with five units for the base and 18 units for the shaft (Figure 16.4). As a result, all of the following features of the drawings are based on the number nine:

- Total diameter of the drawing for column fluting = 99 dactyls of a 0.296 m foot¹
- Total height of the drawing generating entasis = 81 dactyls of a 0.296 m foot²
- Upper shaft radius = 18 modules (along with 24 modules for height of

shaft)³

- Shaft height = 18 units (1 unit = $4/3$ module = $1/24$ of drawing height)⁴
- Lower shaft radius = 54 ($=9 \times 6$) dactyls of a 0.2985 m foot⁵
- Difference between 9-foot plinth and lower shaft radius = 18 dactyls of a 0.2985 m foot⁶
- Upper shaft radius = 45 ($=9 \times 5$) dactyls of a 0.2985 m foot⁷

For the simultaneous use of two units of measurement in a single drawing, scholarship has distinguished between what one may term a “working measurement” and an “intended measurement.” In Roman North Africa, architects commonly conceived of their buildings in terms of Roman feet, but in the actual construction, local craftsmen converted these intended measurements into their own Punic cubits with which they normally worked (Wilson Jones 2001: 104). At the level of graphic execution, the draftsman at Didyma similarly worked with a foot of 0.296 m, but he did so with a foot of 0.2985 m in mind, in order to serve the intended metrological basis for the features that his drawing planned. This procedure is foreign to modern expectations, but in the case of multiple generations of architects and craftsmen, units of measurement need not have been standards in their own right. Instead, they need only have been a *means* that served a more essential consideration: arithmetical concatenation, in which chains of similar numbers link together features and relationships planned at various points in the building’s construction over time (Trachtenberg 2010: 139–141). Going back to before the Archaic period, the number nine and arithmetical progressions of nine (18, 45, 54, etc.) played an important role in Greek thought, used formulaically to express distances and durations (Hahn 2001: 173–174, 181, 185–186), and expressed important proportional relationships in the Classical period, most famously in the repeated 4 : 9 ratio in features in the Parthenon. Through modules and proportions, the repeated application of a specific, abstract number such as nine, along with its divisors and multiples like three or 18, continued a chain of logic that allowed for an interweaving of design and construction evolving over extensive time. In this protracted process, foot units could be fluid, allowing for measuring tools variously divided into different dactyl units, or even to establish newly conceived features of the building as a module. Once established, this module could itself be divided into units able to serve as a new foot measurement for subsequently built features commensurable with the module, and thereby expressed in terms of measurements of the new foot and dactyl units.

Despite the entasis drawing’s clear correspondences to the number nine within the specific context of the intended foot unit, the architect need not have formulated or executed these dimensions as precise measurements of dactyls. In a more practical way, he probably began simply with the size of the plinth (2.69 m), using a pair of dividers to find three of the four parts equal to half its

width, thereby establishing the lower column radius (1.008 m).⁸ From here, he could take five of six parts of the lower column radius to find the upper column radius, just as the upper column radius equals three of four parts of the height of the shaft.⁹ It is only because the plinth itself measures nine feet across, or a radius of 72 dactyls, that subsequent measurements express multiples of nine.

In his actual measurements in dactyls, the architect worked with the foot unit of 0.296 m. The unquestionable presence of this unit has misled analyses toward the false appearance that the ancient architect planned features according to it. Instead, this unit simply provided a means of executing the drawing, probably reflecting the tools that the architect had at hand, and that the intention was to integrate the columns with the determined size of the plinths. In working with this foot unit in the drawings, the final step necessary to execute the full-length horizontal drawing of the shaft across the wall was to complete the individual dactyl lines rising up the reduced-scale shaft from *d1* to *d61a*. The result is visually unsatisfying, since it lacks equal spacing in the dactyl lines and cannot be completed at the top of the shaft, so that the total height equals approximately 60.66 rather than 60 whole dactyls. One must recall, however, that such drawings were created in a context unrelated to the post-Albertian fetishizing of architectural drawings as monuments in their own right. The untidiness of the dactyl lines is consistent with the lack of concern reflected in overlapping the three separate plans, drawing the largest of them right through the smaller two. In executing the actual built forms, these qualities would have made no difference. Instead, the working drawings simply served their purpose and, without ceremony, would have been polished out of existence had the Didymaion ever reached completion.

Architects and Theory

The reduced-scale drawing that planned the entasis of the columns reflects the processes and principles of scale planning described by Vitruvius and embodied by the Vitruvian Man. Just as Vitruvius details, design takes place in the manner of diathesis, in which the architect employs a process of positioning the outer profile of the shaft at its lower and upper radii, the height that separates them, and the base upon which the shaft rests. The logic of this positioning is in accordance with taxis, the establishing of a quantitative system with one part selected as a module, in this case the maximum extent of the curvature. The results are the desired principles of shapeliness, or eurythmia, and modular commensuration, or symmetria. As in the Vitruvian Man's body parts and archetypal geometry of the circle and square, the architect constructs his working drawing with modules that establish its breadth and height, as well as the archetypal geometry of the Pythagorean

triangle. In reflecting these concepts, the working drawing preserves the Greek processes and principles that later define *architectura* for Vitruvius.

This graphic evidence also gives rise to the important question of what embodies these processes and principles: How may the drawing relate to master planning in the form of scale ground plans, elevations, and perspectives that, for Vitruvius, provide the architect's *ideai* to be imitated in construction? Taken in the Didymaion's context of a construction process of long duration, care is needed in relating the evidence for the planning of entasis with the kind of scale drawings mentioned by Vitruvius and analogized in the Vitruvian Man. It is tempting to view the entirety of the Didymaion according to the *taxis*, *diathesis*, *eurythmia*, and *symmetria* observable in the planning of entasis. As in the working drawing's commensurations based on the maximum bulge of curvature, the plinths of the Didymaion express modularity, resulting in commensurations with the *crepis* and *stylobate* in plan. The dimensions of 99×297 feet of 0.2942 m for the walls of the core structure divide into equal units of 9 feet, determining the later positioning of the columns and, between these, the pilasters of the upper zone of the *adyton* walls. In this way, the overall sense of pattern suggested by the commensurations (plinths, *stylobate*, *crepis*) extends to the building as a whole. Once builders converted the number nine to the foot unit of 0.2985 m for the modular plinths, a unified shapeliness was engendered as an end product, even if *symmetria* does not strictly extend to the walls of the core structure. The integrated ground plan of the Didymaion, therefore, may not imitate a master plan. Instead, it may itself be the product of multiple progressions extending the logic of placements, proportions, and commensurations expressing related numbers over generations of builders.

Rather than being an exception with respect to Ionian planning going back to Pytheos and reflected later in the writing of Vitruvius, the Didymaion's general sense of unity as an end product developed over time – and not an originating projection designed outside of time – may represent the norm. Just as the Greek theater's sense of integration arises through the gradual repetition of concentric seating rows, the grid-like, modular underpinning of Pytheos' Temple of Athena Polias at Priene may have integrated features and dimensions retrospectively rather than through a scale ground plan completed prior to building. As close observation reveals, Pytheos' temple lacks the degree of seemingly graphically driven integration found in Hermogenes' Artemision at Magnesia and the Roman restoration of Hermogenes' Temple of Dionysos at Teos ([Figure 16.1](#)). Presumably, the Roman restoration of the temple at Teos reflects the original forms of Hermogenes' temple (Mustafa Uz 1990: 35–39). The temple at Priene provided the model for Hermogenes' temple at Teos (Koenigs 1983: 169), but the walls of the doorway into the *naos* of the late classical original are literally “off the grid” compared with all features found in the copy. Like the circular seating of a theater that expands

outward from the circle of its orchestra, the design of Pytheos' temple might have begun with the naos as the all-important cult hall, according to whose intended dimensions the sizes and locations of the plinths were subsequently fixed. The degree of innovation in the resulting grid of the plinths and their equal interstices should not be exaggerated; as early as around 460 BCE, the architect Libon of Elis created the same grid at the Temple of Zeus at Olympia, but with the abacus blocks on the undersurface of the architrave rather than the plinths on the stylobate. Nor need Pytheos' use of the ground plane (as opposed to Libon's architrave) suggest the primacy of the ground plan, particularly in light of compelling arguments for the importance of the *middle* – and not the bottom – of the columns in determining proportions and spatial relationships (Weber 1991: 434–436). The planar role of the plinths need neither have been Pytheos' overriding design consideration, nor need it reflect scale graphic planning from an abstract aerial view at reduced scale in the way we represent the temple today (Figure 16.1).

A surviving inscription from the Temple of Athena at Priene records that Hermogenes had dedicated “the *hypographe* of the temple, which he also executed” (Hiller von Gaertringen 1906: 143, no. 207; Coulton 1977: 70–71). There is no way to know whether this Hermogenes is the celebrated Ionian architect of the later third century BCE, but the architectural context would certainly fit this interpretation. The term *hypographe* usually refers to an outline, and in suggesting the idea of a drawing that represents something below (*hypo*), it may provide an appropriate description of a ground plan. The specification that the described object was “executed” may suggest that the dedication was somehow monumental, as in a ground plan inscribed on a stone (Coulton 1977: 71). Such a monument would recall the technique of the working drawings at Didyma, but for a purpose other than planning, perhaps as a display of Hermogenes' grasp of the underlying logic of Pytheos' design, converted to an abstract, graphic demonstration.

If such were the case, it is conceivable that Hermogenes – and not Pytheos – may have codified the scale ground plan as a graphic manner of envisioning the relationships of a temple building's overall form. As opposed to the simple peripteral arrangement of columns in Pytheos' temple in Priene, the dipteral arrangement of the Didymaion features two rows of columns all around, an arrangement that was traditional to the large Ionic temples of the Greek East going back to the Archaic period. Both arrangements reflect the positioning of features conceived in terms of the relative dimensions of masses, but Hermogenes appears to have introduced a new consideration in inventing the pseudodipteral arrangement in his Artemision at Magnesia (Vitruvius *De arch.* 3.3.8), which eliminates the inner ring columns as found at Didyma. In this organization, spatial units are abstractly conceived as quantities, expressed through the taxis grid that determines the positioning of features (diathesis). As opposed to the grid that may be drawn retrospectively over the

columns and walls of the temples at Priene and Didyma, the grid for Hermogenes' pseudodipteral temple at Magnesia is autonomous, with its lines establishing integral quantities regardless of whether masses are placed over their intersections. As Vitruvius states in connection with Hermogenes' pseudodipteral temple, Hermogenes followed a system of commensuration according to which the temple divides into parts equal to the size of a module. Establishing this module, according to Vitruvius, is the thickness of a column. Although the lower column diameter may commonly be commensurable with the plinth that itself expresses symmetria throughout a building, the specific identification with the column thickness allows the commensurations to extend upward in elevation through integral ratios of column diameter and height, as well as intercolumnar spacing, classified by the oft-cited four separate systems: pycnostyle, systyle, araeostyle, and eustyle (Vitr. *De arch.* 3.3.1–8). In this way, the architect's plans crystalize a comprehensive integration of features outside of time in advance of the gradual construction process. As observed in both Vitruvius' discussion and the plans of Hermogenes' temples, this suggestion of the value of the modular grid as a starting point for an entire temple's design cannot be as easily posited for the earliest phase of the Didymaion's construction under Paionios and Daphnis in the late fourth century BCE. In the work of the Didymaion's later architect who designed the plinths, columns, and other features, we are on similarly tenuous grounds in assigning to him a lost scale ground plan of the kind that, in a more readily evident way, was later drawn by Hermogenes, and still later described by Vitruvius as an *idea* embodying the processes and principles of which architectura consists.

Rather than reflecting planning practices for overall buildings in the form of a ground plan, the Didymaion's working drawing for entasis may relate to the *ideai* of Vitruvius in a different way. In a manner not preserved elsewhere, the drawing may very well represent common approaches to the building process, whereby proportional and commensurable relationships were anchored in selected modules and arithmetical progression, as well as guiding, archetypal forms like a Pythagorean triangle. It may be that the processes and principles first developed in this context of facture, shaping the habits and expectations of planning that, naturally, were employed later in scale drawings like ground plans and their related elevations. In temple design, longstanding practices of fabricating features and their details and refinements may have similarly informed the graphic, reduced-scale conceptions of Hermogenes.

Perhaps integral to this transition from the graphic planning of individual features to comprehensive layouts was Pytheos' temple at Priene, the principles of which would also have been made known through the commentary that Pytheos authored about his building. Symmetria was a well-established principle in sculptural expressions of the body, as in the fifth-century BCE *Canon* of Polykleitos, for which the sculptor included a well-

known written commentary to explain the work. In a way perhaps unintended by Pytheos, the role of the plinths later may have suggested the new concept of the ground as a plane against which modular relationships take place, helping to establish a distinctively Ionian approach to temple form. More far reaching yet, the similarly modular approach in the graphic planning of individual features and their refinements as preserved at Didyma may have set the stage for Hermogenes' scaled-down graphic projections of entire temples. With this feat of the imagination, even the *Canon* of Polykleitos was surpassed, allowing for the eternal principles of nature's own *idea* for the human body to be envisioned, as well as the unveiling of architectura as a system of order underlying both building and the structure and mechanisms of the cosmos.

FURTHER READING

The classic study of Greek architects, their theory and methods of design (including questions of scale) is Coulton 1977. Coulton's study precedes the discovery of the working drawings at Didyma, the importance and implications of which for curvature and related questions of classical design and construction are explored in the various chapters of Haselberger 1999. In particular, the authoritative overview of these issues in Haselberger's introduction is essential reading on the topic of refinements in ancient practice and theory; see also concise overview (1997). Hellenistic architects and architectural theory, including their Roman legacy, are covered in Wilson Jones 2001. A highly useful and remarkably complete reference for all manner of topics related to the methods of ancient Greek architects and related bibliography is Hellmann 2002. An excellently illustrated, broad treatment of these topics for Greek and Roman architecture (though without treatment of architectural theory and limited as a bibliographic guide) is Malacrino 2010. For detailed, theoretical considerations of primary sources and an exploration of the origins and development of scale design and linear perspective, see Senseney 2011a.

REFERENCES

Coulton, J.J. 1977. *Ancient Greek Architects at Work: Problems of Structure and Design*. Ithaca, NY.

de Zwarte, R. 1994. "Der ionische Fuss und das Verhältnis der römischen, ionischen und attischen Fussmasse zueinander." *BABesch*, 69: 115–143

Gates, C., J. Morin, and T. Zimmerman, eds. 2009. *Sacred Landscapes*

in *Anatolia and Neighboring Regions*. Oxford.

Goette, H.R. 1993. *Athens, Attica and the Megarid: An Archaeological Guide*. London.

Gruben, G. 1963. "Das archaische Didymaion." *JDAI*, 78: 78–182.

Hahn, R. 2001. *Anaximander and the Architects: The Contributions of Egyptian and Greek Architectural Technologies to the Origins of Greek Philosophy*. Albany.

Haselberger, L. 1980. "Werkzeichnungen am Jüngerem Didymeion." *MDAI(I)*, 30: 191–215.

Haselberger, L. 1983. "Bericht über die Arbeit am Jüngerem Apollontempel von Didyma." *MDAI(I)*, 33: 90–123.

Haselberger, L. 1996. "Eine 'Krepis von 200 Fuss gestreckter Länge': Bauarbeiten am Jüngerem Apollontempel von Didyma nach der Urkunde Nr. 42." *MDAI(I)*, 46: 153–178.

Haselberger, L. 1997. "Architectural Likenesses: Models and Plans of Architecture in Classical Antiquity." *JRA*, 10: 77–94.

Haselberger, L., ed. 1999. *Appearance and Essence: Refinements of Classical Architecture – Curvature*. Philadelphia.

Hiller von Gaertringen, F. 1906. *Inschriften von Priene*. Berlin.

Hoepfner, W., and E.-L. Schwandner, eds. 1990. *Hermogenes und die hochhellenistische Architektur*. Internationales Kolloquium in Berlin vom 28. bis 29. Juli 1988 im Rahmen des XIII. Internationalen Kongresses für Klassische Archäologie veranstaltet vom Architekturreferat des DAI in Zusammenarbeit mit dem Seminar für Klassische Archäologie der Freien Universität Berlin. Mainz.

Humann, C., J. Kohte, and C. Watzinger. 1904. *Magnesia am Mäander: Bericht über die Ergebnisse der Ausgrabungen der Jahre 1891–1893*. Berlin.

Kienast, H.J. 1995. *Die Wasserleitung des Eupalinos auf Samos*. Mainz.

Koenigs, W. 1983. "Der Athenatempel von Priene: Bericht über die 1977–82 durchgeführten Untersuchungen." *MDAI(I)*, 33: 134–175.

Lewis, M.J.T. 2001. *Surveying Instruments of Greece and Rome*. Cambridge.

MacDonald, W. 1982. *The Architecture of the Roman Empire*. New

Haven.

McKewen, I. 2003. *Vitruvius: Writing the Body of Architecture*. Cambridge, MA.

Mustafa Uz, D. 1990. "The Temple of Dionysos at Teos." In Hoepfner and Schwander, eds., 35–80.

Nightingale, A.W. 2005. *Spectacles of Truth in Classical Greek Philosophy: Theoria in its Cultural Context*. Cambridge.

Rehm, A. 1958. *Didyma 2: Die Inschriften*. Berlin.

Rumscheid, F. 1994. *Untersuchungen zur kleinasiatischen Bauornamentik des Hellenismus*. Mainz.

Schneider, P. 1996. "Der Baubefund." In Tuchelt, ed., 1–116.

Schwandner, E.-L. 1985. *Der ältere Porostempel der Aphaia auf Aegina*. Berlin.

Senseney, J.R. 2007. "Idea and Visuality in Hellenistic Architecture: A Geometric Analysis of Temple A of the Asklepieion at Kos." *Hesperia*, 76: 554–595.

Senseney, J.R. 2009. "Vision and the Ordered Invisible: Geometry, Space, and Architecture in Hellenistic Sanctuaries of Asia Minor and Kos." In Gates, Morin, and Zimmerman, eds., 35–46.

Senseney, J.R. 2011a. *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture*. New York.

Senseney, J.R. 2011b. "Adrift Toward Empire: The Lost Porticus Octavia and the Origins of the Imperial Fora." *JSAH*, 70: 421–442.

Senseney, J.R. 2014. "Plans, Measurement Systems, and Surveying: The Roman Technology of Pre-Building." In Ulrich and Quenemoen, eds., 140–156.

Trachtenberg, M. 2010. *Building-in-Time: From Giotto to Alberti and Modern Oblivion*. New Haven.

Tuchelt, K., ed. 1996. *Didyma 3: Ergebnisse der Ausgrabungen und Untersuchungen seit dem Jahre 1962*. Mainz.

Ulrich, R. and C. Quenemoen, eds. 2014. *A Companion to Roman Architecture*. Oxford.

Voigtländer, W. 1975. *Der jüngste Apollontempel von Didyma:*

Geschichte seines Baudekors: Istanbul Mitteilungen. Beiheft 14. Tübingen.

von Gerkan, A. 1942. "Der Tempel von Didyma und sein antikes Baumann." *Wiener Jahresshefte*, 32: 127–150.

Weber, B.F. 1991. "Columnae crassitudo: Zur Bemessung des unteren Säulendurchmessers." *MDAI(I)*, 41: 434–436.

Wesenberg, B. 2001. "Vitruv und Leonardo in Salamis: 'Vitruvs Proportionsfigur' und die metrologischen Reliefs." *JDAI*, 116: 357–380.

Wiegand, T., and H. Schrader. 1904. *Priene: Ergebnisse der Ausgrabungen und Untersuchungen in den Jahren 1895–1898*. Berlin.

Wilson Jones, M. 2001. *Principles of Roman Architecture*. New Haven

NOTES

- 1 Difference of only 2.5 mm: $1.834 \text{ m} = (99 \times 0.0185 \text{ m}) + 0.0025 \text{ m}$. This and all of the following measurements are those of Haselberger (1980).
- 2 $1.4985 \text{ m} = 81 \times 0.0185 \text{ m}$ as an exact measurement.
- 3 Differences of 3 and 4.8 mm. Upper shaft radius = about 0.843 m; shaft height = 1.1232 m; maximum rise of curvature = 0.047 m. $18 \times 0.047 \text{ m} = 0.843 \text{ m} + 0.003 \text{ m}$. $24 \times 0.047 \text{ m} = 1.1232 \text{ m} - 0.0048 \text{ m}$.
- 4 Difference of 1.8 mm. Measurement of $d65-d62a = 0.047 \text{ m}$. Measurement of $d62a-d61a = 0.0155 \text{ m}$. Measurement of $d65-d61a = 0.0625 \text{ m}$. Shaft height $(1.1232 \text{ m}) = 18 \times 0.0625 \text{ m} + 0.00018 \text{ m}$.
- 5 Difference of 1.8 mm. Lower column radius = 1.008 m. The foot unit of $0.2985 \text{ m}/16 = 1 \text{ dactyl} = 0.0187 \text{ m}$. $54 \times = 1.0098 \text{ m} = 1.008 \text{ m} + 0.0018 \text{ m}$.
- 6 Measurement from the column axis to the edge of the plinth: $2.69 \text{ m}/2 = 1.345 \text{ m} = 1.008 \text{ m} + 0.337 \text{ m}$, with 0.337 m as the difference between the plinth and the lower shaft radius. $18 \times 0.0187 \text{ m} = 0.337 \text{ m}$.
- 7 Approximately $0.843 \text{ m}/45 = 0.01873 \text{ m}$.
- 8 $(2.69 \text{ m}/2) = 1.345 \text{ m}$. $(1.345/4) \times 3 = 1.009 \text{ m} = 1.008 \text{ m} + 1 \text{ mm}$.
- 9 $0.843 \text{ m} \pm 0.001 \text{ m}$. Lower shaft radius $= (1.008 \text{ m}/6) \times 5 = 0.840 \text{ m} =$

0.843 m – 3 mm.

PART III
Civic Space

CHAPTER 17

Urban Planning and Infrastructure

Betsey A. Robinson

Among the principal concerns of ancient planners were the location and healthiness of a site, the sustainability of water and agricultural resources, and the practical and equitable division of urban space. Diodorus Siculus (12.10.5) reports the wise counsel of the Delphic oracle to the founders of Thurii: “Water to drink in due measure, but bread to eat without measure.” A similar concern for self-sufficiency is reflected in a story recounted by Vitruvius of the architect Deinokrates’ first meeting with Alexander the Great (*De arch.* 2.praef.1–4). He presented the king with his design for a city on Mount Athos, sculpted into the form of a man, his left hand cradling a spacious walled city and, in his right, a bowl collecting mountain streams. After confounding the architect with a question about the productivity of the surrounding countryside, Alexander counseled him that no city could thrive without enough arable land to sustain its population. Nonetheless, Deinokrates impressed Alexander, and he is said to have gone on to shape Egyptian Alexandria, a Mediterranean port-city alongside the Nile Delta, and to command all the granaries of Egypt.

These testimonia offer an introduction to Greek planning, allegorizing the major issues faced by urban planners and highlighting interrelations of foundation and fabrication history, setting and relationship with the countryside (*chora*), and the physicality and aesthetic impact of the resulting city. My chapter will survey urban planning and focus on select case studies, through which I hope to draw attention to trends and to demonstrate three major points. First, Archaic Greek colonies in southern Italy and Sicily were the testing ground, the “crucible” of city planning, to quote Graham Shipley (2005: 345), and they offer the best insights into the principles and process of early efforts. Second, although the tradition that Hippodamos of Miletos was responsible for the celebrated plan of that city in the second quarter of the fifth century is perpetuated in textbooks and popular histories of the “Hippodamian” or gridded plan, Hippodamos must actually have been active as a theorist and practitioner of planning somewhat later in the century; his major contributions were far from his home and no less significant. Finally, beyond the standardized plans that characterized many new cities in the Hellenistic world, the planners of several sites exploited topography in such a way as to create dramatic and highly effective cityscapes. A brief consideration of streets will then be followed by sections on stoas and fountains, two building types of great importance to the organization of cities

and the maintenance of city life.

Urban Planning

Towns and cities are the subject here, taking cities not only as large and important towns but also as entities that had urban institutions and were engaged in activities that significantly impacted the hinterland (see Hansen 2008: 71). The evolution of any settlement unfolds synchronically and diachronically. Some cities seem to have been designed and filled out in a relatively brief “moment,” while others (more commonly) grew over a longer period, and while some cities have been continuously inhabited, others existed for a finite period.

The form of a settlement can be seen as a reflection of social values, political structures, and economic corollaries. Closely related are questions of the goals and intentions of the planners (architects), who themselves interacted with polity and people to fashion the built environment, ordering and articulating space, dividing public and private and the living from the dead, and demarcating boundaries between city and country. Planning required consideration of the prevailing wind directions and adjustments necessary to account them (Vitr. *De arch.* 1.4.1; Plut. *Alex.* 26, along with other hygienic concerns, such as the lay of the land, and the configuration of preexisting plans or structures). Cosmological concerns – the articulation of proper relationships between the human and divine – were also central, and accommodations for religious needs were often made in the first phases of planning (see Shipley 2005: 336).

Studies of urbanization have tended to fall into two branches of scholarship that only sometimes converge. Dominated by theorists and survey archaeologists, one group has focused on the formation and function of the polis, or city-state, and its relationship to its chora as well as to other territories (de Polignac 1995, 2005; Hansen 1997, 2005). Of equal interest and importance are the studies driven by concern with architecture and design, which offer detailed analyses of physical remains and inquire into architects’ design processes (Shipley 2005). Here I focus on the physical appearance of cities and the stages by which they took shape, especially as illuminated through archaeology and survey, literature, and epigraphy.

As R.E. Wycherley notes, “it would have been surprising” if Greeks had not been rigorous planners (1962: 15). As in the related field of architecture, planning became very theoretical and mathematical, but given its role in shaping physical and social space, it likewise interested statesmen and philosophers. Geometric plans promised economy and repeatability. Planning was clearly a social and political action, but while some scholars find

evidence of equality and democracy in Greek settlement plans, such schemes served autocrats equally well.

Old cities and early planning

The Archaic centers of mainland Greece are among the least known and least knowable. The rule for old cities such as Athens and Corinth was “organic” growth, a gradual evolution of the city without a priori planning and subject to local contingencies. The lack of regularity speaks not to random growth but to communal responses to natural and social and political circumstances (Morgan and Coulton 1997: 95). Urban development was occasionally punctuated by major events such as the relocation of the agora, the construction of an aqueduct fostering development in a particular area, or the wholesale replanning of another area, as undertaken at the Piraeus in the later fifth century. There are some similarities. The agora was the heart of every city, a center of civic and commercial life, often including religious shrines as well. Industrial complexes were relegated to the edges, as were cemeteries as early as the eighth century. Within the walls, residential patches grew and merged.

Ancient literary accounts offer some terminology for urban features. Each polis comprised the *asty* and the *chora*, the central settlement ranging in scale from village to city and its countryside. A *plateia* was a “broad” street or avenue, while smaller streets were called *stenopoi*, meaning “narrows” (Theophr. *On Winds*, fr. 5.29). Modern authors often use the Latin term *insula* for the blocks defined by the intersection of streets. *Isonomia* reflects the concept that colonists received equal shares in a colony, translating into equal shares of land or *kleroi* (sing. *kleros*). Early planners seem to have little concern for aesthetics or experiential effects. The early plan of the Corinthian colony of Syracuse was aligned along the long axis of the Ortygia island. At Himera, a seventh-century foundation, first-phase streets paralleled the northern edge of the terrace on which the city was built; around 580–560 they were supplanted by a new plan oriented to the cardinal points (Shipley 2005). The later planners at Himera deviated from the original layout, whereas other secondary designs clearly incorporated earlier designs, as at Thurii (Greco 2009).

The grid plan is “by far the commonest pattern for planned cities in history,” geographically and temporally ubiquitous (Kostof 1991: 95), and we owe its early development to Greek planners, or *geometrai*. Planned cities have their origins in the eighth or seventh century BCE, and multiply in the sixth and fifth centuries, an active period of colonization. It was in Magna Graecia especially (southern Italy and Sicily), where Greek settlers pioneered the art and science of rational city planning. Planners of largely independent

“colonies” and other new cities were faced with virgin ground and new possibilities. They responded with large-scale spatial schemes, laying them out well before monumental structures took shape, and at some sites where they never would. The colonial bridgeheads were usually defensible and well-watered promontories or adjacent islands (Pithekoussai, Ortygia). Early mainland settlements remained close to the shore, often near rivers and land-routes into the countryside. Colonists and colonies depended on the successful exploitation of surrounding farmland, and in turn agricultural success and surplus brought the prosperity that fueled their growth (Mertens and Greco 1996: 243; Carter 2006). Absent from most sites are the prominent acropoleis of the Greek mainland (Mertens and Greco 1996), but planners often reserved space for religious buildings and rituals from the beginning (including a heroön to the *oikistes*, or founder), as well as for suburban and rural sanctuaries.

The planning and populating of cities happened on separate timelines. Central zones were reserved for varied purposes, particularly administration and assembly, religion, and trade. Primary streets were surveyed and plotted first; they were often intersected by cross-streets, but nowhere was there the emphasis on a central crossing seen in Roman designs. The earliest examples already display a certain degree of regularity, but even the earliest plans are much later than the traditional foundation dates or the first archaeological signs of presence, and their precise dates are often debated. Called *strip planning* in modern usage (from the Latin *per striga*), the most common approach in the Archaic period was to divide a site into long, narrow blocks between parallel roads. Cross-streets divided the individual blocks, with intersections that were either oblique or orthogonal. Plans in which parallel cross-streets intersect at the same angle, but not necessarily a right angle, were developed as early as the eighth century BCE at Megara Hyblaia, on the east coast of Sicily, and by the seventh century at nearby Syracuse. Rectilinear, or orthogonal, plans existed at Sicilian Naxos by the seventh century, and later became prevalent. The construction of dwellings followed, continuing, if they thrived, until much of the plan filled in. In general, earlier foundations were “open textured,” with room for small-scale cultivation among freestanding houses in the blocks, while later, denser packing seems to have become more common (Morgan and Coulton 1997: 93).

Traditionally founded in 728 BCE on the eastern shore of Sicily, Megara Hyblaia is an important case study in the history of orthogonal strip planning. At least five districts, each with its own orientation, were laid out around an agora, in which two or three temples were eventually built. In each district, roughly north–south, parallel *plateiai* are crossed by east–west streets, *stenopoi*, creating house plots (Mertens 2006: 63–72). At Selinous, a colony of Megara Hyblaia in Southwest Sicily, the geometrai developed a large and well-articulated master plan around 580–570 BCE. Antonio Di Vita

emphasizes their adaptive responses to natural contours and animation with “relational spaces” (1996: 289). Beyond the agora, residential quarter extended along three differing orientations, with long, thin strips, or *insulae* (29.25 × 175.50 m). The acropolis was a slight eminence at the south end of the city, devoted to the poliac divinities from the foundation, with two monumental temples added by the early fifth century. Extramural sanctuaries of chthonic and celestial divinities stood outside the walls but still in plain view of the city, to west and east. Flourishing until its destruction in 409 by the Carthaginians, Selinous demonstrates the way a comprehensive city plan could accommodate growth and gradual monumentalization.

Metapontum provides an especially well-documented case study of planning in a city and its chora. The Achaean colony in southern Italy was founded near the coast and between two rivers, its northwestern edge marked by a wall that was pierced by a straight road leading from the shore into the countryside. A zone north and east of the road was designated for public use. Despite a traditional foundation date in the eighth century BCE, the earliest known structures belong to the second half of the seventh century, including bleachers (*ikria*), huts, an open-air shrine, and perhaps a wooden temple (Pliny’s vine-stem columns of the Temple of Hera: *NH* 14.2.1). After a destruction event marked by an ash layer, later structures were built. The town was then strip-planned in the third quarter of the sixth century. The scheme included broad plateiai and stenopoi, narrower but varying in width, intersecting at right angles for blocks about 180 m long and 35 m wide. The public area was divided into sanctuary and agora with boundary stones (Mertens and Greco 1996: 254).

Two archaic peripteral temples were aligned with the street plan. In the case of one (Temple A), earlier work on a different orientation was halted and the temple was realigned and rebuilt (Carter 2006). In the agora, a large circular assembly structure was built around the mid-sixth century BCE (Carter 2006: 198, 204–205). This and other contemporary projects attest to there already being a sizeable and prosperous settlement, though the filling out of urban and extraurban grids occurred only gradually (Carter 2006: 200, 202, 209).

Recent mapping of the Metapontine chora allows comparison with the city plan and understanding of interrelations between the two (Carter 2006). Parallel land divisions (marked by roads and canals) are approximately 195–205 m apart and depart from the urban system by a few degrees; they extend 12–14 km inland. The earliest seem to have been in place by the late sixth century BCE, and it seems that the definition and division of the chora occurred together with the urban organization. About two or three generations after the establishment of the city, a major sanctuary was founded about 3 km away, on the Bradana river (Pedley 2005: 55).

In the same period, the “organic” city remained the rule in mainland Greece. An exception was Halieis in the Argolid, where development appears to have

begun with the differentiation of several zones, at least two of which were strip planned with subdivisions of rectilinear insulae (though there was at least one oblique street). Although the excavated streets and insulae date to the fourth century BCE, they are thought to go back to the sixth century, making Halieis the earliest planned city in mainland Greece (Owens 1991: 67; Shipley 2005: 345).

Classical designs

The second half of the fifth century BCE brought the mature period of urban planning. Expanding urban areas, synoecisms, and, still, the occasional colony provided new opportunities. In general, the period witnesses a move from strip planning to grid planning, defined by perpendicular, equidistant (or nearly) streets and, often-squarer blocks. Regional differences remained. Western planners still seem to have favored strip plans and elongated blocks (Naxos, Camarina, Heracleia Minoa). This period also saw the regularization of agoras and a diversification and monumentalization of the buildings they contained, represented by work at Naxos and Himera in the early fifth century BCE and at Gela and Camarina later in the century. Elsewhere, a preference for shorter blocks, some square or almost so, can be detected.

An important figure in this period is Hippodamos of Miletos. Although he remains a popular hero of urban design and is still often touted as the inventor of town planning, or the planner of post-Persian Miletos around 470 BCE, the scholarly consensus now places his floruit somewhat later, in the second half of the fifth century (Gorman 1995; 2001: 155–163; Shipley 2005; Gill 2006). The “textbook” grid of Miletos, moreover, is largely the product of Hellenistic and Roman evolution (Shipley 2005: 362). It seems clear that Hippodamos theorized about urban organization and division; from Aristotle (*Pol.* 2.1267b30–37), we learn of his ideal division of urban space in a city of 10 000 men – craftsmen, warriors, and farmers – and allotting even thirds of the city to sacred, public, and private uses, with public land supporting the warriors, while the private land was to be allotted to farmers.

A contemporary of Pericles, and probably working under his direction, Hippodamos is said to have invented the division of cities and to have planned or “cut up” (*katetemen*) the Piraeus (Arist. *Pol.* 1267b22–23), a project of the third quarter of the fifth century. This work was probably framed by his planning of the Panhellenic colony of Thurii in Magna Graecia in 444 BCE and later, the new city of Rhodes in 408 BCE, a synoecism of Ialysos, Camiros, and Lindos.

Diodorus Siculus (12.10.6–7) reports that Hippodamos planned Thurii, and his principles may well be reflected in its “new and unprecedented principles of regularity and symmetry, applied, as far as we can see, with maniacal

precision” (Greco 2009: 116). The new city was founded by the Thouria spring over the remains of Sybaris, an early Achaeian colony destroyed by nearby Croton in 510 BCE. Excavations indicate that it was smaller than its predecessor and that its plan preserved the line of at least one earlier street (and probably the city took its orientation from its predecessor). Of the fifth-century city, traces have been found of at least three north–south plateiai (oriented about 30 degrees west of north), as well as two perpendiculars. Their coordinates reveal that the site was divided into 396×296 m tracts, which were themselves subdivided by narrower streets and alleys into smaller units. Greco (2009) believes that the north–south avenues represent three of the four plateiai that, according to Diodorus (12.10.7), divided the city lengthwise and were named Heracleia, Aphrodisia, Olympias, Dionysias; the east–west plateiai should then represent two of the three named cross-streets, Heroa, Thouria, and Thourina.

Dense modern development in the Piraeus has limited excavation, but recent work has revealed a plan including parallel streets running northeast from the Akte hill to the northern city wall across the neck between the two main harbors, Kantharos and Zea (Hoepfner & Schwandner 1994: 22–50). Northwest–southeast streets intersected them at right angles. The “Hippodamian agora,” mentioned by ancient authors (Andocides 1.45; Xen. *Hell.* 2.4.1), is probably that noted by Pausanias on the northeastern side of the city, northwest of Zea, near the findspot of a *horos* stone for the agora; an inscription recording the construction of the Arsenal of Philon in the mid-fourth century supports this reading (Gill 2006: 6–7). Gill (2006) proposes that Hippodamos also delineated zones for dockyards, an *emporion*, or commercial port, and possibly the Dionysion and a theater on the northwest slope of Mounychia.

Strabo (14.2.9) enthuses about the Hippodamian plan of Rhodes, the federal capital of that island from 408 BCE. There, excavations have revealed the salient features of the ancient plan, consisting of streets, terraces, and integral drainage systems (see Hoepfner and Schwandner 1994: 59–62). Oriented a few degrees off compass, parallel and perpendicular streets were used to create “major rectangles,” each subdivided into smaller blocks. As at Thurii, the width of plateiai varies; every third was broadened for emphasis, with the largest nearly three times wider than the rest (Gorman 2001: 162).

Olynthos and Priene are exemplary cases of the late fifth and fourth centuries BCE, by which time grids were often laid out with stringent regularity. Olynthos was a small town from the seventh century until 432 BCE, when the Chalcidic League synoecized the site (technically an *anoikismos* or “moving inland”), adding to a fairly irregular extant settlement (on the “South Hill”) a newly planned district on a flat hill just to the north (the “North Hill”). The agora is identified with an open area at the south end of the North Hill; it boasted a stoa, fountain, and another public building; significant coin finds in

adjoining streets suggest that temporary shops or stalls stood in that area (Cahill 2000: 503). North–south avenues were laid out, intersected at right angles by smaller east–west streets to form blocks or *insulae* that were generally 86.34×35.00 m but were less standard around the edges. Houses were laid out in blocks consisting of 10 similar (but not identical) units, grouped in two lines, set back to back across an alley. In his house-by-house study, Nicholas Cahill weighs the evidence of *isonomia* against apparent social and economic inequalities (2000: 500). Inscriptions indicate that property values varied in such planned cities, with house prices seemingly correlating with proximity to the agora (Cahill 2000: 508–509). No religious architecture has been found in the urban area, and Cahill suggests that an inscription mentioning a sanctuary, found west of the site, may suggest that the main sanctuary was extramural (2000: 499). Three cemeteries have been excavated, north, east, and west of the city. Probably in the early fourth century, the city grew beyond the walls to an eastern plain, where the grid is oriented about two to three degrees off that of the North Hill (Cahill 2002: 45). The city prospered for 84 years, with population growth gradually filling in the grid, but after its defeat by Philip II of Macedon in 348 BCE, Olynthos was all but abandoned (Cahill 2000, 2002).

The polis of Priene is known from the fifth century BCE, but the planned city on Mount Mycale, in the shadow of a high citadel overlooking the Maeander Valley, is a foundation of the fourth century BCE. Its remains reflect a stringent application of grid planning, tempered by the integration of plans and elevations, with porticoes used not only to articulate spaces but also to join and unify discrete complexes. Streets defined *insulae* of equal size (47.2×35.4 m). They were scaled according to importance, with the main avenue from the city's western gate to the agora being the widest (Ferla 1996: 52). The agora was apparently designated as open public space from the beginning, but it developed gradually. It occupied two full *insulae* and the southern halves of two more. An adjacent 1.5 *insulae* were reserved at the east for the Sanctuary of Zeus, enclosed in *stoas* by the third century BCE, though the temple would not be completed until the second half of the next century; a smaller extension was earmarked for a fish market (Radt 1993: 206). A *stoa* was built along the entire north side around 300 BCE, and a more elaborate pendant to the south followed in the third century; the street along the southern side of the agora ran behind the façade and under its roof. The Sanctuary of Athena was on slightly higher ground, within a colonnaded court leveled with retaining walls and fill, occupying two blocks and two half-blocks.

Scholars have characterized the plan of Priene as “often charming but essentially mechanical” (Pollitt 1986: 235) or sometimes the outgrowth of “a fundamentally democratic orientation” (Radt 1993: 203). Indeed the city gives the impression of having been simply projected on a map of the site, with no

regard for the irregular topography. Ironically, in so rigidly applying their plan, the geometrai created an inherently uneven system. Supposedly equal blocks differ substantially in slope, surface area, and quality, providing unequal construction conditions and presumably different values or prices (Radt 1993: 204). Priene is the foil for everything that was to follow.

Hellenistic applications

Hellenistic designers pushed urban planning schemes in two directions. As the Macedonians and Greeks came to control new territories, new administrative and military centers were needed. Remains have been excavated from Alexandria, Egypt, to Ai Khanoum, Afghanistan. Strategic locations and utilitarian designs were the norms of new foundations, with designers following standardized procedures to lay out rational grids, with spaces reserved for agoras and sanctuaries, and residential districts divided into elongated insulae. Dynastic capitals, furthermore, included royal complexes, often placed on the highest ground of the city, as at Macedonian Aigai and Pella or Mysian Pergamon. Much in the spirit of Deinokrates (mentioned at the beginning of this chapter), Hellenistic designers were also clearly interested in creating dramatic cityscapes. J.J. Pollitt has recognized a Hellenistic “taste for theatricality” in architecture and planning, reflected in striking settings and the creation of exciting and sometimes surprising spatial changes and vistas (1986: 230). The trends reflect both practical and ideological concerns, on one hand the need to build new settlements swiftly and efficiently, and, on the other, the desire of rulers and residents to express city identity and pride through architecture and urban form.

Many of the new cities of the age have a “cookie-cutter” appearance, with surrounding walls and severely imposed grids having one or more broad avenues. Such is the plan of Kassope in Northwest Greece (see Hoepfner and Schwandner 1994: 114–126), as well as Thessalian Demetrias, built by Demetrios Poliorcetes in 290 BCE. From Antioch-on-the-Orontes to Seleuceia-on-the-Tigris, Seleucid planners likewise laid out urban grids, favoring blocks with a 2 : 1 length-to-width ratio (Owens 1991). Main arteries were often broadened for emphasis.

The masterpiece of Deinokrates and his associates, Alexandria was founded in 331 BCE on a strip of land between the Mediterranean Sea and Lake Mareotis. It was linked to the Nile by canals and well placed to exploit the fertile Egyptian hinterland and trans-Mediterranean trade. The lines of the walls were said to have been laid out by Alexander himself (Plut. *Alex.* 26.3–10). Although Alexander died soon after its foundation, Alexandria thrived, first as the Ptolemaic capital and as a major metropolitan center ever since.

In a first-hand description of the late first century, Strabo (17.1.8) writes that

Alexandria was divided into five districts. Termed *klimata*, and known by the Greek letters alpha through epsilon, their distribution is still debated. Though severely limited by modern development, archaeological evidence suggests a grid of nearly square blocks filling the area south of the large, eastern harbor (McKenzie 2007: 19–30, 37–40). The north–south streets were oriented some degrees west of north, the better to draft Etesian winds (Diod. Sic. 17.52.2). They were crossed at even intervals by east–west streets, the largest of which, called the plateia or Canopus Street, was said to be a *plethron* in width (100 ft, or about 30 m) or greater (Strab. 17.1.8; Diod. Sic. 17.52.3), but it was probably closer to 14–20 m. Interaxials are 330 m and 278 m respectively, and at least some blocks were further subdivided by smaller streets. Major streets had integral water supply channels and drains. Other Hellenistic features include the Heptastadion causeway linking the Pharos island to the mainland between two harbors, the Temple of Serapis, a racecourse, and a royal palace quarter and cemetery. The agora remains to be rediscovered. A Doric stoa near the center of town, and references to some kind of quadrilateral stoa (*tetragonos kaloumene stoa*) are suggestive of an agora but could have served other purposes (McKenzie 2007: 68).

Laid out as a royal capital in the third century BCE, the city of Pergamon epitomizes the theatrical bent of Hellenistic planning. Residential quarters and complexes fan out around the sides of the small mountain, capped by the citadel and royal palaces. As Pollitt writes, the city’s planners seem to have envisioned a design in which the physical ascent accentuated symbolic readings, “with the buildings connected with mundane affairs of life at the bottom, those connected with education and the development of the mind in the middle, and those expressing divine powers and supreme cultural achievements at the top” (1986: 233). A broad street wound up the mountainside. Between its turns, a relatively regular grid of narrow streets defined blocks of about 70 m². Under the paving-stones of the steep southeast–northwest streets, storm drains ran toward a great drain under the broad street. But farther east, where the surface dips, the main grid took a more northerly orientation. Sanctuaries, agoras, and other complexes were enclosed by walls and stoas (Radt 1993: 204–206). Their lines echoed natural contours, but buttressed retaining walls were used to create massive platforms for self-contained complexes, perhaps best exemplified by the Sanctuary of Demeter, and the Sanctuary of Athena, in which the area around an earlier temple was regularized and monumentalized with two-story stoas in the second century.

Stoas

A stoa is a freestanding building, “a great deal longer than it is high or deep,

and which has a colonnade occupying most of one side and a portico as the most important part of its interior,” as defined by J.J. Coulton in his authoritative study of the form (1976: 4). Stoa range from simple, covered buildings fronted by a colonnade to more complex two-story, aisled buildings with chambers along one side. In plan, they vary from the self-contained rectangles of mainland Greece to the L- and *Π*-shaped (or winged) structures that were designed by Classical Ionian architects to define and frame open spaces. Stoa were found in most Greek cities and sanctuaries and, indeed, they came to be considered a basic urban amenity (Polybius 9.27.9; Coulton 1976: 13).

Stoa offered shade from the summer sun and shelter from winter inclemency; the few that included a second story offered good views over surrounding buildings. They were often built near theaters and in gymnasia; many offered places for strolling and informal meetings. They were used to display statues and other objects of monetary or symbolic value. Internal divisions might be used for commerce, dining, or for sleeping or incubation at sanctuaries (as at those of Asclepius at Epidaurus, and on Kos).

Stoa are attested as early as the early Archaic period, particularly in the eastern islands and Asian coast. They reach maturity, and “monumental status,” in the fifth century BCE, with all main types represented by its closing decades. Stoa of grand proportions and multiple stories appear in the fourth century BCE, further proliferating and diversifying in the Hellenistic period. Long used by Ionian planners as tools for the shaping of space, stoa increasingly fulfilled similar roles in the mainland, even if freestanding rectilinear buildings remain the rule (Coulton 1976: 7, 55).

The Athenian Agora offers multiple examples, contextualized by systematic excavation and study. From the early fifth century BCE, the Royal Stoa (Stoa Basileus) stood at the northwest corner of the Athenian Agora and served as the office of the royal archon (Figure 17.1a). It was a small, plain building, facing east, with the eight Doric columns of the façade echoed by four Doric columns spaced along the long axis, dividing the interior space into two aisles. The Painted Stoa (Stoa Poikile), built circa 475–460 BCE, was considerably more ornate. Its exterior Doric colonnade faced south over the Panathenaic Way, and Ionic columns marked the central axis. Subtle touches like the marble bases and capitals used in that order added some luxury, which was further enhanced by the display of captured weapons and panel paintings of mythological battles and the Athenian victory over the Persians at Marathon by the leading artists of the time (Paus. 1.15.1–1.16.1).

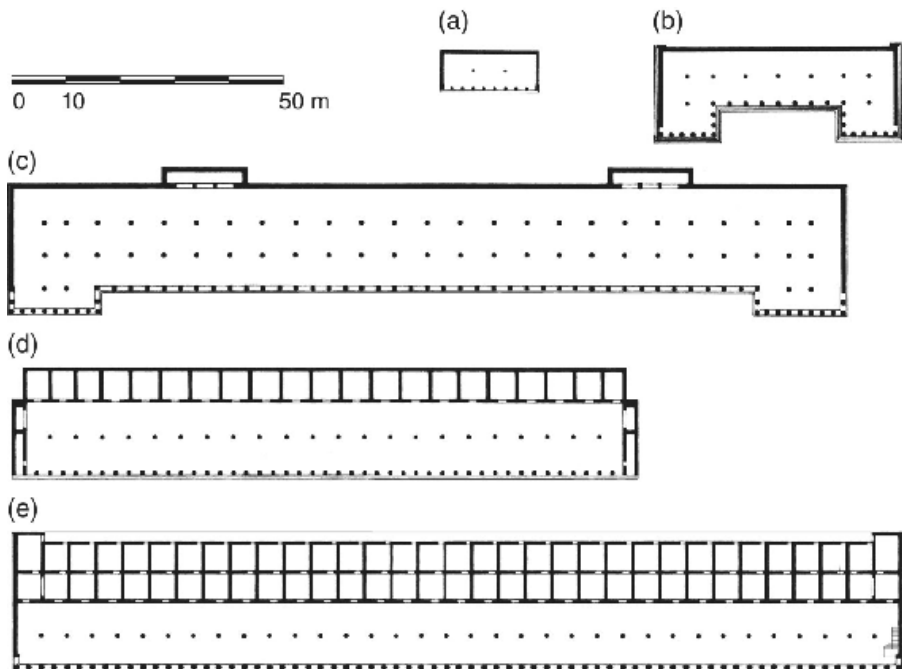


Figure 17.1 Plans of stoas at uniform scale: (a) Royal Stoa (Athens); (b) Stoa of Zeus Eleutherios (Athens); (c) Stoa of Philip II (Megalopolis); (d) Stoa of Attalos II (Athens); (e) South Stoa (Corinth).

Source: adapted from Coulton 1976, used with permission of Oxford University Press.

The Stoa of Zeus Eleutherios (Figure 17.1b) was built circa 430–420 BCE, across the Panathenaic Way from the Painted Stoa. Two pedimented wings framed a screen of nine Doric columns, one marking the central axis, and the architects ably handled issues resulting from the more complex form and its reentrant angles. The exterior columns were of marble with a poros frieze, and marble akroteria in the form of Nikai have been reconstructed. A colonnade of unfluted Ionic columns traced the long central axis of the stoa, in which wall paintings were added in the fourth century, by the painter Euphranor. It would prove to be an influential plan. John Camp compares examples at Megalopolis, Thasos, Kalauria, and Delos (2010, 73). Despite its more modest materials and rougher finish, the late fifth-century building known as South Stoa I dominated the Athenian Agora with its elevated position and 80-meter-long façade, the largest of its time. Its two-aisled colonnade was backed by 15 chambers, interpreted as dining rooms for city officials (Camp 2010: 161–164).

Most fourth-century stoas resembled their predecessors, relatively modest in size and simple in plan. This century, however, brought two major developments: the introduction of two-storied stoas and a major graduation in scale. In Athens, a stoa within the Asklepion is the earliest surviving two-story stoa, the design of which anticipates numerous stoas to come. Built in

honor of Philip II in the third quarter of the century, a 155-meter-long winged stoa at Arcadian Megalopolis looks forward to the giant stoas that would follow in the Hellenistic period, though its design remained fairly simple, with Doric façade and wings and two internal Ionic colonnades (Figure 17.1c).

The Hellenistic period was the grand age of the stoa. Whether or not the impetus came from Macedonia and Pergamon (as much of the funding did), the grandest examples are to be found in mainland Greece. In Athens, for example, the Stoa of Eumenes II (r. 197–159 BCE) was built beside the theater on the south side of the Acropolis (Vitr. *De arch.* 5.9.1). His successor, Attalos II (r. 159–138 BCE) added a grand two-story stoa, 111.96 m long, on the east side of the Athenian Agora (Figure 17.1d). Important developments are also seen in the Peloponnese. Although its date is debated, the 164.38-meter-long two-story South Stoa at Corinth arguably represents the culmination of the type, with its sweeping Doric colonnade and Ionic interior order, as well as 33 rear rooms or “shops,” almost all provided with a well, to which water came through a channel of the subterranean Peirene water system (Figure 17.1e). In this era, stoas multiplied in sanctuaries under the patronage of Hellenistic royals, including several at Delos (Antigonos and Philip V) and at Delphi, a stoa built by the Pergamene Attalids and its slightly later, western pendant, erected by the Aetolian League. Both projected beyond the walls of the sanctuary on purpose-built terraces.

Stoas appear in cities in sanctuaries across the Greek world. At Lindos, Rhodes, stoas were integral components of an elaborate system of ascending terraces, serving as semipermeable screens, surrounds, and backdrops.

Roads and Streets

Country roads were, for the most part, unsurfaced routes of varying width, best suited to pedestrians and animal traffic. Sometimes, where bedrock was exposed, grooves or “wheel ruts” were made to accommodate wheeled vehicles of a standard gauge (138–144 cm), and by the Hellenistic period, some routes were metaled with quarry chippings (White 1984: 92–93). As is clear in the previous sections, streets were a “basic unit of urbanism,” not only means of passing through a city and from point to point but also tools for shaping urban space and defining places therein. Streets were public property. Regular maintenance was necessary to keep passages clean and surfaces level, as well as to prevent the encroachment of buildings. These activities, like the construction of streets, were overseen by local governments.

In both planned and unplanned cities, streets varied significantly in width. Major thoroughfares and sacred procession routes tended to be broadest, followed by routes wide enough for two carts to pass one another (about 4–6

m), and finally alleyways, only some wide enough to allow the passage of a single cart. Wheel ruts mark the locations of streets, reflect on their use, and hint at greater circulation patterns (Costaki 2006: 242). Paved routes were rare: Olynthian cobblestone streets and slab-covered avenues in Priene offer examples. More common were gravel or road metal, the latter characterized by packed and leveled fills dominated by hard materials like stone tailings and potsherds, and sometimes including coins, ostraka, lamp fragments, loom weights and pieces of broken sculpture (Costaki 2006: 93). City streets were sometimes delimited by boundary markers or curbstones. Terrace walls and fills leveled uneven ground, while ramps and steps, only some preserved, facilitated movement over steep slopes. Drains were often integral components of substructure (Tölle-Kastenbein 1994). Inadequate drainage or blocked passages would lead to muddy streets, as noted, for example, by Strabo in Smyrna (14.1.37). A new direction in research considers traffic patterns inside cities, and routes between cities and rural areas, in a range of case studies around the Mediterranean, including Athens, Greek cities in Sicily and Hellenistic Asia Minor, as well as cities of the Roman period (see the essays in Mertens 2008).

Water Supply and Fountains

Water “in measure” is an absolute necessity of life, and its management was crucial to the success of any urban site, whether planned or unplanned, and the health of its inhabitants. Water features often attracted settlement and became famous landmarks. Frequently emanating from natural fissures or caves, natural springs offered volume and purity, and were the *raison d’être* of many a settlement. The provision of water for consumption and hygiene, as well as the drainage of wastewater and storm surplus were central concerns in every ancient city (see Tölle-Kastenbein 1990).

Wells and cisterns were the simplest hydraulic interventions, the former common in areas of aquiferous bedrock, as at Athens and Corinth, the latter at sites that were more dependent on direct rainwater catchment, such as Olynthos. Cisterns ranged from simple rock-cut or built chambers, uncovered or covered, to complex systems of chambers and tunnels fed by roof runoff and accessed through wells and manholes.

The earliest fountain houses were simple affairs that improved access to water as well as its collection and protection but also recognized its importance in durable and increasingly monumental form. Early “step fountains” descend into level ground, like Delian Minoe, or into acropolis slopes, like Athenian Klepsydra and Acrocorinthian Peirene. Developed archaic and classical fountain houses typically included reservoirs, draw-basins, and sometimes animal-head spouts, sheltered by simple columned porches. Athens boasted

freestanding stoa-like fountains, for example, the Southeast Fountain House and the fourth-century Southwest Fountain House in the Agora (Figure 17.2a–b; Camp 2010: 173–174). In the Corinthia, spring houses were often built against terrace edges with much of the structure carved out of the living rock behind the façades. They were likewise outfitted with basins and spouts, with flow ensured by the creation of extensive reservoirs, as at Peirene (Figure 17.2c), and later at the fourth- to third-century Asklepion-Lerna and Glauke fountains, along with comparable structures at Perachora (Figure 17.2d) and Sikyon (Tomlinson 1969; Glaser 2000: 429–431; Robinson 2011: 146). Such benefactions highlight patrons’ expectations of significant returns on hydraulic investments, as well as the experience gained in stewarding a precious resource through wet and dry seasons and cycles.

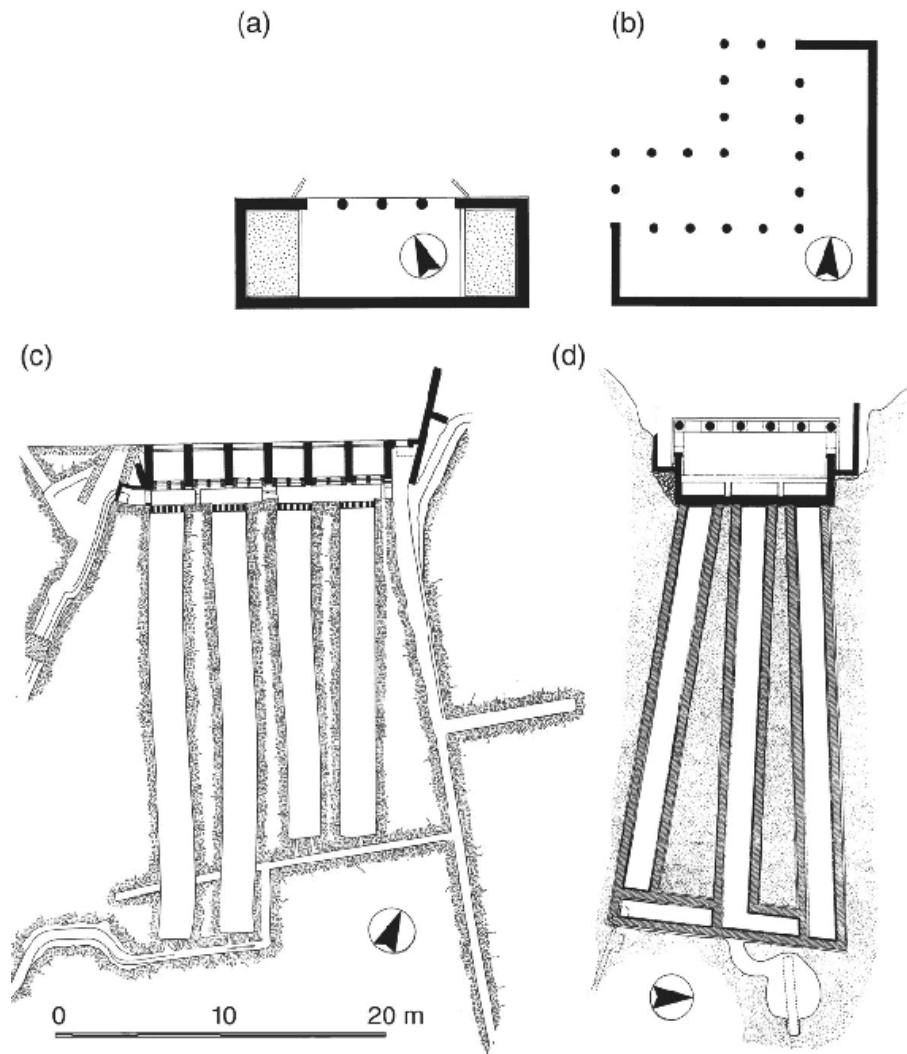


Figure 17.2 Plans of Fountains at uniform scale: (a) Southeast Fountain

House (Athens); (b) Southwest Fountain House (Athens); (c) Peirene Fountain (Corinth); (d) fountain house (Perachora).

Source: (a–b) adapted from Travlos, used with permission of American School of Classical Studies at Athens; © B. Robinson; (d) adapted from Tomlinson 1979, used with permission of the British School at Athens.

Already in the Archaic period, the needs of some cities exceeded local sources, and long-distance aqueducts were created, generally constructed with terracotta pipelines following a gentle gradient through protective trenches and tunnels. It is likely that the Peisistratid tyrants sponsored the construction of such an aqueduct. Renate Tölle-Kastenbein (1994: especially 101–105) traces its course over 15 km (with later repairs and extensions) through the city, from its Hymettian source through the Ilissos Valley to a point east of the Acropolis where it divided into two branches, one leading to the area of the Agora (where it fed the Southeast Fountain and perhaps others) and the other running south of the Acropolis towards the Pnyx (see also Camp 2001: 35). Thucydides (2.15.4–5) also credits the Peisistratids with the Enneakrounos fountain house near the Ilissos river, southeast of the Acropolis. Counted by Herodotus (3.60) among the Greeks' most impressive constructions, the mid-sixth-century aqueduct of Eupalinos at Samos included a 1036-meter-long tunnel through which the approximately 3-km-long pipeline carried water from a remote spring into the city (see [Chapter 5](#)). The well-preserved Megarian fountain, attributed by Pausanias (1.40.1) to the tyrant Theagenes but probably a work of the early fifth century BCE, also drew from a distant source (Gruben 1965; Glaser 2000: 429–430; Hellner 2004). There, two 164 m³ reservoirs had octagonal piers supporting a roof and draw-basins out in front. Corinth's aquiferous bedrock could be tapped in various ways, and in place of pipelines, springs tended to be improved *in situ*, with their flow maximized by underground water-catchment tunnels. Approaching a kilometer in length, the Peirene system was the most elaborate, but similar tunnels were begun at the nearby Sacred Spring by the late sixth or early fifth century BCE (Robinson 2011). Systems of catchment channels and reservoirs were developed at many Corinthian springs, some functioning continuously to the present day (Landon 2003).

Increasingly varied plans, the use and combinations of orders, and sculptural additions reflect increased Hellenistic aestheticization. At Corinth, the Peirene fountain was enlarged and redecorated in the second half of the fourth century BCE. Seven short walls of fine poros-masonry were inserted under the natural stone ceiling in front of the draw basins to create six square antechambers into which visitors would step to draw water over low parapets. Two pilasters and perhaps a central pier graced each parapet, replaced about a century later by the pilasters and Ionic column-adorned piers that are preserved today. Built in Messene in the late third century, the Arsinoë Fountain was fed by the Klepsydra spring uphill to the north. Its plan was conservative, but its Doric

façade stretched across 40 m for an effect that was traditional and familiar yet impressive in its sheer size (Reinholdt 2009).

In the Hellenistic period, water provisioning systems became more impressive than ever before. As Pergamon outgrew its water supply in the early second century BCE, three long-distance (20–45 km) pipeline-aqueducts were built, each dominantly gravity-flow but concluding with an inverted siphon propelling water to the citadel. The Madradağ aqueduct was the most impressive, depending mainly on gravity flow through terracotta pipes; but where the ground level dropped precipitously for several kilometers between the eponymous mountain range and the Pergamene citadel, a reverse siphon through lead pressure-pipes drove water to a head of 180 m (Garbrecht 2001).

FURTHER READING

For theories and structures of Greek *poleis*, see de Polignac 2005, Hansen 1997; 2005; 2008 and other publications of the Copenhagen Polis Center. Shipley 2005 provides an outstanding survey of archaeological and literary evidence for Archaic and Classical planning. Mertens and Greco 1996 and Di Vita 1996 detail evidence for Greek planning in southern Italy and Sicily. Within a textbook treatment, Owens 1991 usefully covers Hellenistic planning, augmented by Pollitt 1986 and Radt 1993. Burns 1996, Gorman 2001, and Shipley 2005 offer insight into the life and works of Hippodamos, with detailed case studies of his cities, Thurii and Piraeus by Greco 2009 and Gill 2006. Cahill 2002 and Carter 2006 demonstrate the value of excavation and survey for understanding *asty* and *chora*. Coulton 1976 remains the authority on *stoas*. For streets, the dissertation by Costaki (2006) is comprehensive, and Broder 2008 and Du Bouchet 2008 briefly treat conditions and terminology. Tölle-Kastenbein 1990 and Glaser 2000 offer broad surveys on water usage in the Greek world. More detailed explorations, with bibliography include, for Athens: Tölle-Kastenbein 1994, Camp 2010; Megara: Gruben 1965; Corinth: Landon 2003, Robinson 2011; Messene: Reinholdt 2009; Syracuse: Collin-Bouffier 1987; and Pergamon: Garbrecht 2001.

REFERENCES

- Ballet, P., N. Dieudonné-Glad, C. Saliou, and M. Evina, eds. 2008. *La rue dans l'antiquité: Définition, aménagement et devenir de l'Orient méditerranéen à la Gaule*. Actes du colloque de Poitiers, 7–9 septembre 2006. Rennes.
- Broder, P.-A. 2008. “La cité est dans la rue: Espace extérieur, parcours

et rues en Grèce ancienne.” In Ballet *et al.*, eds., 51–56.

Burns, A. 1976. “Hippodamus and the Planned City.” *Historia: Zeitschrift für Alte Geschichte*, 25: 414–428.

Cahill, N. 2000. “Olynthus and Greek Town Planning.” *CW*, 93: 497–515.

Cahill, N. 2002. *Household and City Organization at Olynthus*. New Haven.

Camp, J.M., 2001. *The Archaeology of Athens*. New Haven.

Camp, J.M. 2010. *The Athenian Agora: Site Guide*. Princeton.

Carter, J.C. 2006. Discovering the Greek Countryside at Metaponto. *Jerome Lectures*, 23. Ann Arbor.

Collin-Bouffier, S. 1987. “L’Alimentation en eau de la colonie grecque de Syracuse.” *MEFRA*, 99: 661–691.

Costaki, L. 2006. “*The Intra Muros Road System of Ancient Athens*.” PhD dissertation, University of Toronto.

Coulton, J.J. 1976. *The Architectural Development of the Greek Stoa*. Oxford.

de Polignac, F. 1995. *Cults, Territory, and the Origins of the Greek City-State*. Chicago.

de Polignac, F. 2005. “Forms and Processes: Some Thoughts on the Meaning of Urbanization in Early Archaic Greece.” In Osborne and Cunliffe, eds., 45–69.

Di Vita, A. 1996. “Urban Planning in Ancient Sicily.” In Pugliese Carratelli, ed., 263–308.

Du Bouchet, J. 2008. “Les noms de la rue en Grec ancien.” In Ballet *et al.*, eds., 57–61.

Ferla, K. 1996. *Priene*. Cambridge, MA.

Garbrecht, G. 2001. *Die Wasserversorgung von Pergamon*. Stadt und Landschaft 4. Berlin.

Gill, D.W.J. 2006. “Hippodamus and the Piraeus.” *Historia*, 55: 1–15.

Glaser, F. 2000. “VI.1. Fountains and Nymphaea.” in Wikander, ed., 413–451.

Gorman, V.B. 1995. “Aristotle’s Hippodamos (‘Politics’ 2.1267b22–

30).” *Historia*, 44: 385–395.

Gorman, V.B. 2001. *Miletos: The Ornament of Ionia*. Ann Arbor.

Greco, E. 2009. “The Urban Plan of Thourioi: Literary Sources and Archaeological Evidence for a Hippodamian City.” In Owen and Preston, eds. 108–117.

Gruben, G. 1965. “Das Quellhaus von Megara.” *Archaiologikon Deltion*, 19 A’: 37–41.

Hansen, M.H., ed. 1997. *The Polis as an Urban Centre and as a Political Community*. Acts of the Copenhagen Polis Centre 4. Copenhagen.

Hansen, M.H., ed. 2005. *The Imaginary Polis*. Acts of the Copenhagen Polis Centre 7. Copenhagen.

Hansen, M.H. 2008. “Analyzing Cities,” In Marcus and Sabloff, eds., 67–76.

Hellner, N. 2004. “Die Krene (κρήνη) von Megara.” *AM*, 119: 163–220.

Hoepfner, W. and E.-L. Schwandner. 1994. *Haus und Stadt im klassischen Griechenland*. Munich.

Kostof, S. 1991. *The City Shaped: Urban Patterns and Meanings Through History*. Boston.

Kristensen, T.M. ed. 1993. *City & Nature: Changing Relations in Time and Space*. Odense.

Landon, M.E. 2003. “Beyond Peirene: Toward a Broader View of Corinthian Water Supply.” In Williams and Bookidis, eds., 43–62.

Marcus, J. and J.A. Sabloff, eds. 2008. *The Ancient City: New Perspectives on Urbanism in the Old and New World*. Santa Fe.

McKenzie, J. 2007. *The Architecture of Alexandria and Egypt 300 BC–AD 700*. New Haven.

Mertens, D. 2006. *Città et monumenti dei Greci d’Occidente: Dalla colonizzazione alla crisi di fine V secolo a.C.* Rome.

Mertens, D., ed. 2008. *Stadtverkehr in der antiken Welt*. Palilia, 18. Wiesbaden.

Mertens, D. and E. Greco. 1996. “Urban Planning in Magna Graecia.” In Pugliese Carratelli, ed., 315–346.

- Morgan, C. and J.J. Coulton. 1997. "The Polis as a Physical Entity." In Hansen, ed., 87–114.
- Osborne, R. and B. Cunliffe, eds. 2005. *Mediterranean Urbanization 800–600 B.C.* Proceedings of the British Academy 126. Oxford.
- Owen, S. and L. Preston, eds. 2009. *Inside the City in the Greek World: Studies of Urbanism from the Bronze Age to the Hellenistic Period.* Oxford.
- Owens, E.J. 1991. *The City in the Greek and Roman World.* London.
- Pedley, J. 2005. *Sanctuaries and the Sacred in the Ancient Greek World.* Cambridge.
- Pollitt, J.J. 1986. *Art in the Hellenistic Age.* Cambridge.
- Pugliese Carratelli, G. ed. 1996. *The Western Greeks.* Venice.
- Radt, W. 1993. "Landscape and Greek Urban Planning: Exemplified by Pergamon and Priene." In Kristensen, ed. 201–209.
- Reinholdt, C. 2009. *Das Brunnenhaus der Arsinoë in Messene.* Vienna.
- Robinson, B.A. 2011. *Histories of Peirene: A Corinthian Fountain in Three Millennia.* Ancient Art and Architecture in Context 2. Princeton.
- Shipley, G. 2005. "Little Boxes on the Hillside: Greek Town Planning, Hippodamos, and Polis Ideology." In Hansen, ed., 335–402
- Tölle-Kastenbein, R. 1990. *Antike Wasserkultur.* Munich.
- Tölle-Kastenbein, R. 1994. *Das archaische Wasserleitungsnetz für Athen und seine späteren Bauphasen.* Mainz am Rhein.
- Tomlinson, R.A. 1969. "Perachora: The Remains Outside the Two Sanctuaries. Description of the Waterworks of the Upper Plain." *ABSA*, 64: 195–221.
- White, K.D. 1984. *Greek and Roman Technology.* Ithaca.
- Wikander, Ö. 2000. *Handbook of Ancient Water Technology.* Technology and Change in History 2. Leiden.
- Williams, C.K., II and Bookidis, N., eds. 2003. *The Centenary: 1896–1996.* Corinth 20. Princeton.
- Wycheley, R.E. 1962. *How the Greeks Built Cities.* London.

CHAPTER 18

Protection and Trade: Girding the City

Spencer Pope

Early Greek Walled Cities

Highly prominent in the Mediterranean landscape even today, ancient city walls are among the most enduring evidence of antiquity. They were instrumental in defining the polis in the Archaic period and were an important physical indicator of status, boundaries, and adornment for the Classical and Hellenistic Greek city. Evidence for fortifications of urban centers increases steadily from the late Iron Age onward: it is now established that at least half of the Greek settlements dated between the eighth and sixth centuries BCE had fortifications, with the earlier examples concentrated in Asia Minor and islands of the Aegean Sea (listed in Hansen and Nielsen 2004: 1368–1375; Hellmann 2010: 299). By the Archaic period, urban walls were an expected part of urban topography, and the sixth century saw even fuller implementation of city walls.

Urban walls and fortifications were integral to the image of the city, and descriptions appear in the poetry of Homer and later writers throughout the Archaic period. *Teichos* is the term used for walls, but it also signified “acropolis” or “fort” (Frederiksen 2011: 20–27). The Homeric description of Troy included walls “wide and beautiful” (*Il.* 12.446–447), while both the Trojan and Greek camps had *dourata* – wooden planks or beams (*Il.* 12.36), perhaps understood as framing around a mudbrick exterior, possibly used to support a gantry on the interior side. The imaginary city of Nausithoös had walls; they are, in fact, the first element listed in the description of the city (*Od.* 6.9, 7.43–45). Archaic painted pottery also illustrates this part of civic architecture. An important early depiction of military architecture is found on the François Vase (circa 570 BCE), and it contains a transversal gate with soldiers sallying out of a wooden door. The wall is constructed with rectangular blocks and includes square merlons and crenels, which held piles of stones used for defense.

Developing in sophistication from rubble construction to monumental adornments, the starting point for Archaic fortifications is nonetheless quite different from the citadels and walls of the Mycenaean period, with their large-stone masonry. That earlier, still impressive, construction employed massive, regular blocks placed in rough courses, known as “Cyclopean” stonework; it is found at Mycenae, Tiryns, the Athenian Acropolis, and

Argos. The technique was used for both defensive walls and *tholos* tombs. Walls in stone appear again in the post-Mycenaean period in the ninth century BCE at Old Smyrna, Vathy Limenari on Donousa, Zagora, and perhaps Salamis on Cyprus (Frederiksen 2011: 104). A solid fortification wall at Zagora on Andros ran across the headland and cut off the peninsula containing the settlement; the curtain was constructed with schist blocks and is reconstructed to 4–5 m high. The earliest fortifications at Old Smyrna (circa 820 BCE) were even more impressive: the outer face was composed of river stones set in clay and faced with large roughly worked blocks. The wall (4.75 m wide) is backed by pebble fill, which raises the interior above the exterior ground level (Nicholls 1958–1959).

Three types of walls appeared in the early Archaic period: the first encloses only an acropolis or peak, which created a so-called *fluctberg*, or emergency refuge, as at Emporion on Chios. In the second type, part of a settlement is protected with natural defenses complementing the wall; these are found at Zagora, the isthmus wall at Methana, and the Dema Wall in Attica. The third and most common type is a wall completely surrounding the settlement. Circuit walls of the seventh century BCE (and circuits with seventh-century phases) include: Abdera, Apollonia, Corinth, Eretria, Halieis, Hephaistiai, Megara Hyblaea, Melie, Miletos, Sicilian Naxos, Oikonomos, Pergamon, Hypsili on Andros, and Old Smyrna.

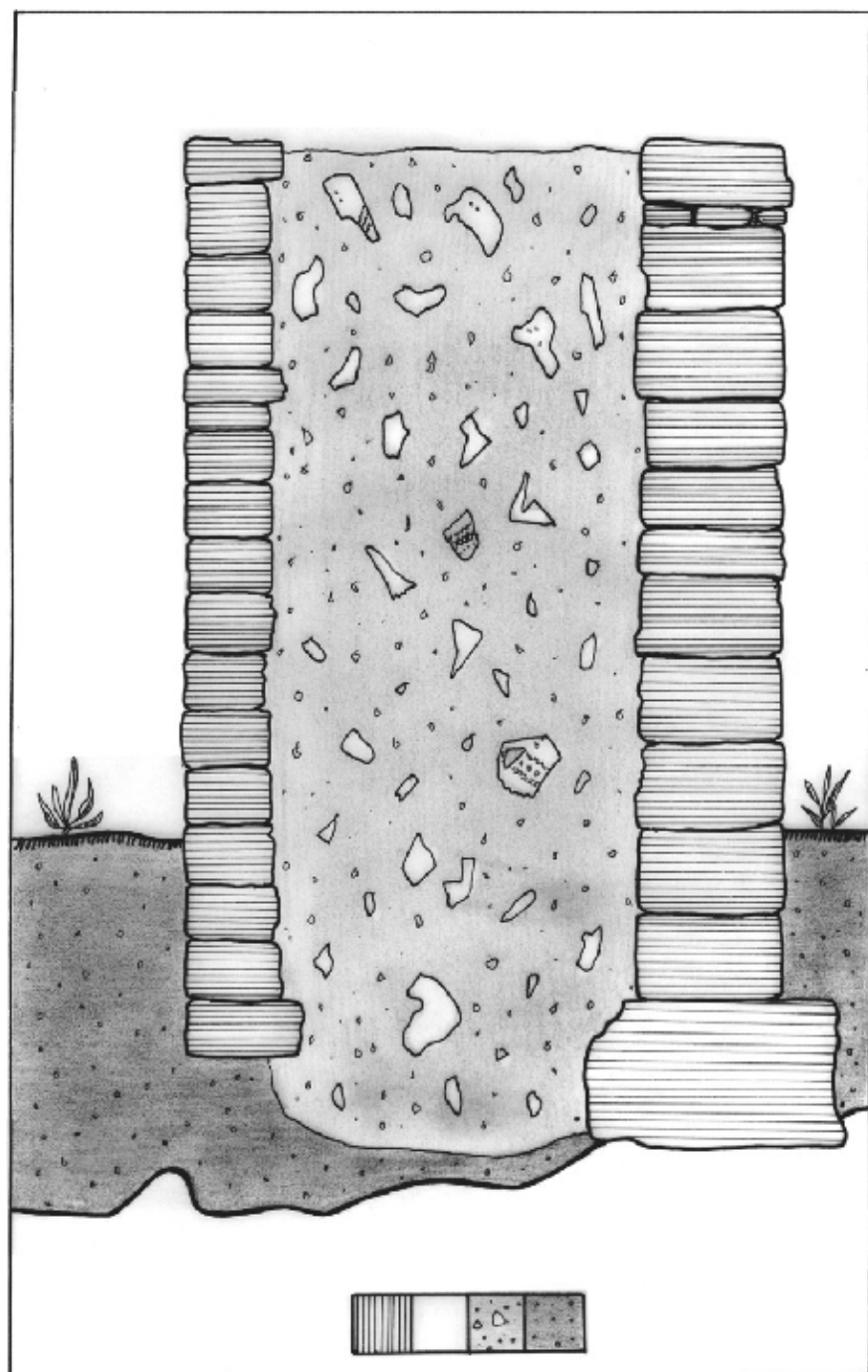
Circuits and Masonry Techniques in the Archaic Period

The circuit wall grew in proportion to the communities it protected. Among fortified sites of the early Iron Age, over half had intramural space of less than 3 ha, nearly all are smaller than 6 ha, and only possibly two extended much more: Paphos and Salamis on Cyprus, at 45 and 70 ha respectively. Among seventh-century fortifications, an enclosed area of 5–7 ha was most common. Two circuit walls were substantially larger: Abdera (110–120 ha) and Corinth (at nearly 300 ha). At Corinth, a wall excavated at the west edge of the Potter's Quarter may have been part of a circuit that included Acrocorinth as its acropolis and the intervening plains down to the settlement (Williams 1982: 15–20). Italian Cumae, which abutted non-Greek territory, may have been fortified from its moment of foundation in the eighth century BCE (d'Agostino, Fratta, and Malpede 2005). From the beginning of the sixth century BCE, the *apoikia* (new settlement) was enclosed within a fortification wall that ran across the plain and encircled an acropolis covering a total of 80 ha. Circuit areas steadily increased across the sixth century BCE, with the majority of walls enclosing 35–80 ha. As Greek cities developed on plains and moved away from hilltop settlements, so, too, did walls begin to be built onto

packed earth rather than directly onto exposed bedrock.

Wall construction in the Archaic period was carried out for the most part with mixed materials: stone used for the base supported mudbrick work placed above. The stone socle or base of the wall commonly extended 1.5–2.0 m in height and was usually built with a solid footer (the base of the foundation), slightly wider (10–20 cm) than the blocks forming the exterior faces. Above the footer, walls were built with front and rear faces, contained dirt and/or rubble fill within, and were finished with a flat upper surface to accommodate courses of mudbrick. This type of construction is known as a “double face wall” (Figure 18.1). The width of masonry walls varies from 1.45 m at Oikonomos to over 4.0 m at Cuma and other locations. Exceptions to the double faced rubble fill with stone socle and mudbrick upper courses do occur in limited numbers. The fortification wall at Pergamon, possibly dating to the Archaic period, was composed entirely of stone. At Sicilian Naxos, the foundations of a Bronze Age wall were reused in the early Archaic period with additional masonry construction: the plentiful volcanic basalt obviated the need for any other material for the walls, which is likely to have had no mudbrick portion. Also in Sicily, Megara Hyblaia was protected by a seventh-century earthen rampart; the fortification measured 6–8 m wide; although today it is preserved at 1 m high, its original height is reconstructed at approximately 6 m. Earth was excavated from directly in front of it, creating a ditch that added to the impenetrability of the circuit wall. A hilltop could be defended with a terrace or “agger” wall that consisted of one exterior face built in front of the sloping terrain with soil and rubble filling the intervening gap (Figure 18.2).

(a)



(b)

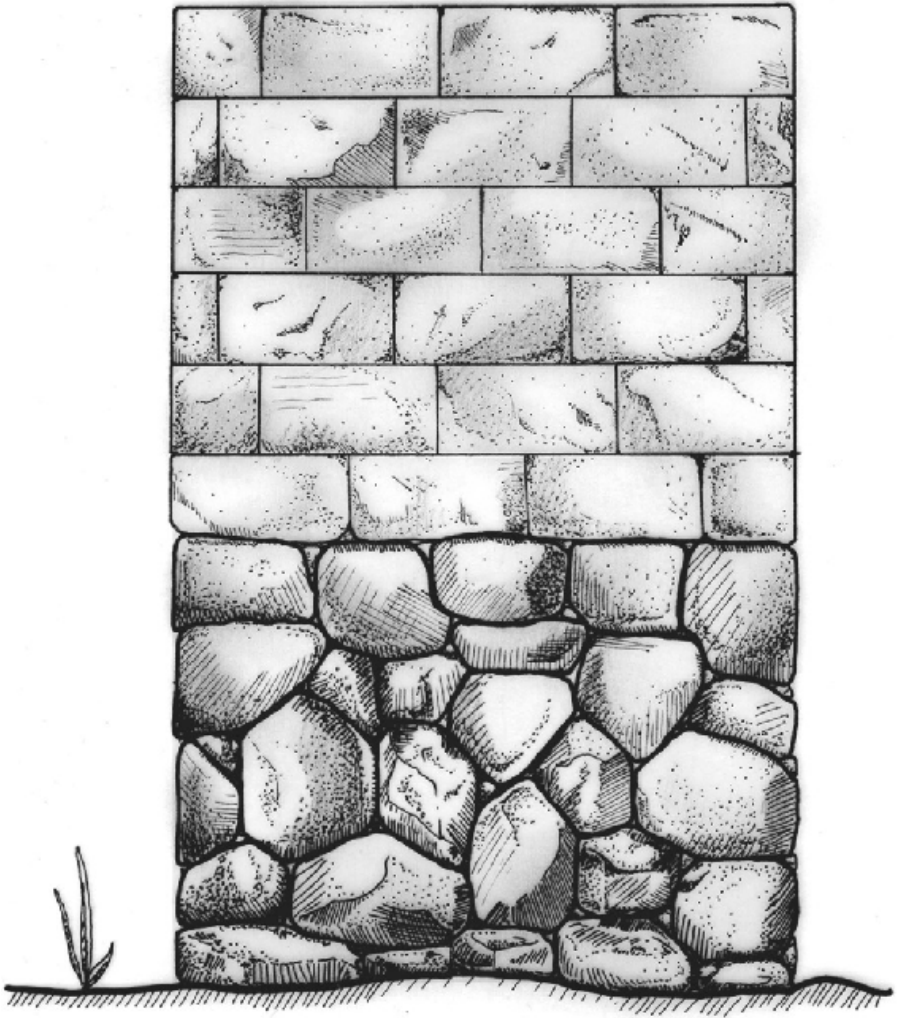


Figure 18.1 Section of double face wall, elevation of wall with stone socle and mudbrick upper.

Source: S. Huisbrink, used with permission.

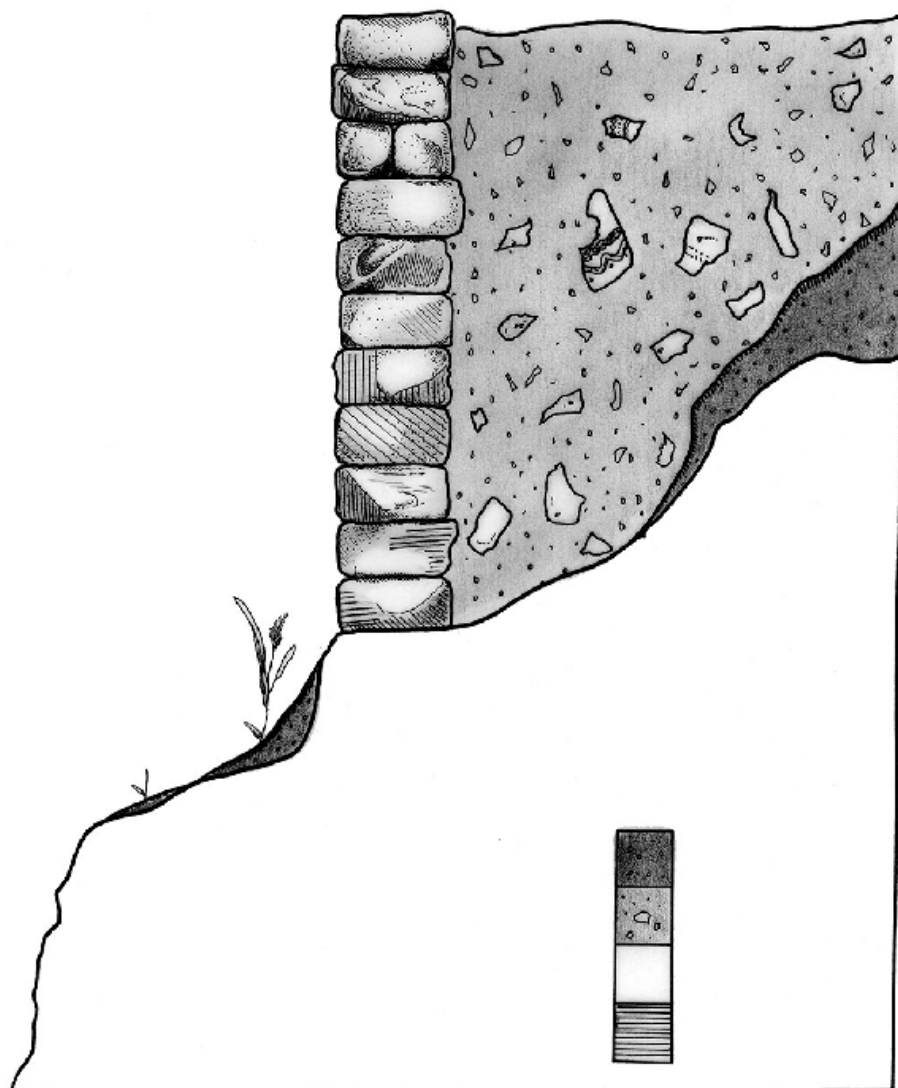


Figure 18.2 Agger or terrace wall, section view.

Source: S. Huisbrink, used with permission.

Walls with mudbrick upper portions continued as standard construction well into the Classical period. This seemingly primitive material was demonstrably sufficient for the application: *IG II* 1² 463, dated to 307 BCE, describes repair in mudbrick to an Athenian wall. A thin plaster coating made it resistant to rain, and timber frames kept it aligned and vertical. The production of mudbrick is much more expedient than quarrying stone and less costly; moreover, constructions of mudbrick are easier to repair than those using stone. The use of this rudimentary material may seem paradoxical, but its widespread and long use is a testament to its suitability: in periods before the

development of siege weaponry, mudbrick sufficed against projectile weapons. The soft, low-density mass dampened the impact from weapons such as the battering ram rather than transmitting the shock as stone would (Adam 1982: 18). This property of mudbrick was well understood in antiquity, and Pausanias mentions the resiliency of mudbrick walls against attack – but in the context of commenting also on their disadvantage: they would collapse in overly wet conditions. In fact, Pausanias reports, both Kimon at Eion (in Thrace) and Agesipolis at Mantinea diverted nearby rivers as a stratagem of war to dissolve the mudbrick and capture the cities (Paus. 8.8.8). Owing to the perishable nature of the material, there are only a few examples of mudbrick *in situ* today: walls at Sardis and Eleusis (both sixth century BCE), and Gela (fourth century BCE) are among the best-preserved examples.

Mudbricks were batch-produced from local sources. Soil was extracted from the surface or excavated from pits, sieved for purity, and sprayed with water; it was then compressed in wooden molds and dried for days until all moisture was evaporated. Vitruvius indicates that mudbricks had standard dimensions: Lydian: 1.5 ft × 1.0 ft wide (0.49 × 0.327 m); a 5-hander is 1.25 feet, employed for public use; and a 4-hander is 1.0 feet, for private use (Vitr. *De arch.* 2.3.3). Mudbricks from Eleusis resemble Vitruvius's description and are similar in size: 0.45 × 0.45 × 0.10 m. Hemi-bricks were customarily used to create the proper interval of joints under solid construction to avoid weaknesses.

The socle (stone lower portion of the wall) was developed with stylistic flair following the way blocks are cut, shaped, and fitted together, adding an aesthetic and impressive aspect to the fortification, still prominent in the landscape today. Beyond simple rubble walls, which were employed in the Early Geometric period, from the Archaic into the Classical period five principal styles of masonry were used. For the Archaic period, the most common styles have been called by modern convention polygonal, curvilinear polygonal, and ashlar. Polygonal masonry (Figures 18.3) became widespread first on the Aegean islands and coastal cities of Ionia and then on the Greek mainland; it was constructed with multilateral blocks, that is, blocks with more than four faces and with straight edges. In the developed form, each block fits flush with the adjacent ones without gaps between them. Varied in size, shape, and number of faces, polygonal masonry does not create seams or vulnerable lines of joins that could weaken the entire construction, either in an earthquake or under duress in a siege. A developed form displays edges accentuated to form a “V” on external or upper surface, and a companion block is cut with a series of complementary serrations to bond the blocks together: the result is added stability and appealing aesthetics. This type was used in the West Gate at Eretria (Figure 18.4).



Figure 18.3 Polygonal masonry, Athenian Kerameikos.

Source: S. Pope.



Figure 18.4 West Gate with polygonal masonry, Eretria.

Source: S. Pope.

In a variation of polygonal masonry, the stonecutters created curved edges

instead of straight edges, and fitted blocks together with parallel and complementary arcs on blocks. The irregular joints provide no natural line of weakness and are therefore especially suitable for retaining walls, but they are also frequently used for fortifications. The style, which first appeared in second half of seventh century BCE, is also known as “Lesbian” masonry following a passage in Aristotle’s *Nicomachean Ethics*: “Like the leaden rule used by Lesbian builders; just as that rule is not rigid but can be bent to the shape of the stone, so a special ordinance is made to fit the circumstances of the case” (Arist. *Eth. Nic.* 1137b). R. Scranton places the origins of the Lesbian style in Aeolis, Boeotia, Attica, and Ionia; the style seldom appeared in Peloponnese, and rarely in western Greece (1941: 16–19). Volcanic basalt in the region of Mt. Etna lent itself well to this style, but the sandstone and limestone found elsewhere on Sicily and in southern Italy are less suitable. The most prominent example of curvilinear polygonal (or Lesbian) is the retaining wall at Delphi below the Temple of Apollo, dated to circa 500 BCE (Figure 18.5). Curvilinear polygonal is also found at Eleusis in the socle of the first Telesterion (seventh century BCE) and in the socle of the Archaic fortification wall attributed to Peisistratos. The prevalence of examples from the Aegean and Asia Minor is commensurate with natural deposits of harder stone, including marble. Both polygonal and curvilinear polygonal can be recognized in “developed” and “undeveloped” or “regular” and “irregular” iterations: in the lesser-developed version small stones are placed in interstices between larger blocks to fill small gaps while the developed form does not require such patching and in general uses blocks of more uniform size. Both styles appear from the Archaic period onward, and in earlier periods the undeveloped form is more common.



Figure 18.5 Curvilinear polygonal masonry from temple retaining wall, Delphi.

Source: S. Pope.

Trapezoidal masonry appears as a stylistic midpoint between polygonal and ashlar, and can even be categorized as a variation of polygonal. Trapezoidal masonry is defined by two parallel faces and two (or more) oblique faces. The lower and upper faces are horizontal so as to allow coursing; courses can be isodomic (of equal height), pseudo-isodomic (of alternating yet regular heights), or irregular (without discrete courses). Trapezoidal isodomic appears on Thera, Delos, and at Panakton; pseudoisodomic at Pleuron and Stratos. Ashlar masonry, constructed with blocks containing square or rectangular faces and therefore edges cut at 90-degree angles, constitutes the basic building type of Greek architecture and has a long history extending back to the eighth century BCE. Ashlar masonry is ubiquitous in the Archaic period: both schist, which breaks cleanly into horizontal planes, as well as marble, limestone, and sandstone are easily shaped into rectilinear solids.

Attention to the length of blocks and regularizing the patterns of joints is the only remaining variable in Ashlar works: at Messene, builders employed ashlar blocks of varying length (irregular ashlar isodomic), while later constructions interrupt the regularity with transversal blocks built into the thickness of the wall.

In addition to the shaping of blocks, the masonry of fortification walls displayed a range of finishes to the surface. Unfinished or roughly cut is

classified as quarry face, while more elaborated forms include hammer work, making the face roughly flat but not finished, pointed work and furrowed work, in which chisel marks are left in the face, usually vertically. Tooth chisel or tooled work flattens the face to approximate finished masonry of buildings. An excellent example is found at Larisa in Asia Minor, where the chisel face stringcourse adds visual appeal ([Figure 18.6](#)). The earliest polygonal walls of the fifth century BCE, for example, Xanthos in Lycia, received a finely worked face. Joints appear in three principal forms as well: drafted, beveled, and plain. Drafted margins act as a type of reverse anathyrosis and provided flat surfaces for aligning exterior blocks flush with one another.



Figure 18.6 Chisel face finish on ashlar string course, Larisa.

Source: S. Pope.

Transition in Design of Circuits in the Classical Period

At Athens we can follow the expanded use of walls in the first half of the fifth century BCE, when the city was sacked by Persians and then threatened by Spartans. The Themistoclean circuit wall, built in 479/8 BCE as a reaction to the Persian invasion, enclosed the city in circuit 6 km in length. Thucydides comments about its hasty construction by every available person:

It was in this manner that the Athenians got their wall built in so short a time, and even today the structure shows that it was put together in haste. For the lower courses consist of all sorts of stones, in some cases not even hewn to fit but just as they were when the different workers brought them, and many stelai from grave plots and worked stones were built in. For the circuit wall of the city was extended in every direction, and for this reason they laid hands on everything in their haste. (Thuc. 1.93.1–2)

The wall's expedient construction is confirmed by archaeological finds: the socle is comprised of poros and limestone with a rubble-filled core (stone chips and clay); it was built one to two courses high and ranged in width from 2.50 to 3.35 m (Theodorakaki 2011: 83). The defensive perimeter of Athens was enlarged again with the construction of the Long Walls running 6 km from the *asty* to its harbors (Thuc. 1.107.1; Conwell 2008). Begun in 462/1 BCE, the North Wall ran to Piraeus and the South Wall to Phaleron. In the middle of the 440s BCE, a third wall was built parallel to the Piraeus wall (80 m distant), creating a narrow corridor that connected the city to the sea and its navy. The walls were constructed with stone socles in polygonal and trapezoidal masonry and mudbrick upper courses. The Long Walls were destroyed 404 BCE, but they were rebuilt in 395 and once again in the late fourth century BCE. The final form of the wall included hollow towers, postern gates used as sallyports, and a wall-walk behind a parapet that served as a low protective wall on the exterior edge of the upper surface of the wall, designed to protect soldiers moving atop the curtain (Conwell 2008: 3–4).

The Athenian construction of the Themistoclean Wall and the addition of the Long Walls represents a more expansive approach to civic defenses. Larger circuits and longer walls create a full enclosure rather than a stronghold to weather a siege. Eventually this led in other places to larger circuit walls that enclosed vast tracks of land that were not intended to be occupied by dwellings or the *asty* itself but instead follow natural terrain for the most expedient defensive line. In this way the wall is loosely belted around the city and traced along ridges, banks, or the edge of a ravine to produce the most effective line of defense. This type is called "*Gelandemauren*," a term coined by A. von Gerkan (1924: 10). An example is the city of Stratos (in Akarnania), where the well-preserved walls enclose a vast area. The increased circuit size meant that portions of the walls were left un- or under protected,

therefore towers and sallyports were needed to deploy collected soldiers to meet attackers along the length of the wall. The increased frequency of posterns is the first indicator of an offensive turn in Greek fortifications. A wooden walkway (*parados*) reached by wooden stairs facilitated movement of guards; once inside, troops were protected by a crenelated parapet: a raised wall with projecting blocks (merlons) alternating with void (crenels) to create a shooting slot for defending soldiers.

The advent of *Gelandemauren* is just one result of a revolution in warfare that occurred in the late fifth and early fourth centuries BCE. The introduction of advanced siege weaponry, catapults, battering rams, and other machinery designed to penetrate city walls induced counter developments in fortifications. The Peloponnesian War developed into a war of poliorcetics, or city-sieges, and fortified defenses that relied on extemporaneous construction; earthen and wood constructions were instrumental in both assault on and defense of Plataia (Thuc. 2.76–78; Lee 2006: 497–498).

The most rapid developments occurred in Sicily: Syracuse revolutionized its defenses following battles first against the Athenians (415–413 BCE) and, a few years later, against Carthaginian attackers. Following the destructions of Himera, Agrigento, Gela, and Camarina by the Carthaginians in 409–406 BCE, Syracuse dominated eastern Sicily as the sole protective power among Greek poleis. Under the direction of the tyrant Dionysios I, the city developed countermeasures to the city-siege and destructive weapons of Punic forces, whose capacity then was greater than their Greek opponents. The defenses of the Greek cities, which consisted of stone and mudbrick constructions, were no match for the foreign siege engines: Selinous fell in just nine days (Diod. Sic. 13.55.1, 13.56.3–6). These techniques served as a catalyst for developments in Greek fortifications, and a new generation of city walls was constructed using new masonry techniques that included augmented and more solidly built walls, more towers, and increased numbers of postern gates. All-stone construction, or rubble-filled double faced walls, replaced mudbrick walls in most new constructions, although mudbrick continued to be used occasionally, for example, at Gela where the sandy terrain itself inhibited siege engines. The catapult emerged as the siege weapon of choice during this era; traditionally it is credited to Dionysios I of Syracuse but it was perhaps used elsewhere before then (Campbell 2011).

An advanced form of the fortification wall, designed to withstand siege machinery, was built with stone faces retaining a rubble filled core. Vitruvius uses the term *emplekton* for this arrangement, describing it as a masonry style that places blocks horizontally (running along the exterior face of the wall) alternating with blocks built into the thickness of the wall (Vitr. *De arch.* 2.8.7). At intervals a single block ran through the entire thickness of the wall and formed a header on either side (a *diatonos*), adding greatly to the stability of the wall (Tomlinson 1961; Karlsson 1992: 69). “Stretchers” formed the

exterior face alternated in the same masonry course with longitudinally arranged blocks, “headers,” which extended into the thickness of the wall. The alternation was often coordinated throughout different courses so that the header is centered on the blocks above and below it. Arranged at regular intervals, the placements created masonry “chains” throughout the course of the wall (Karlsson 1992: 69). Coordinated vertically, walls were conceptualized as a series of compartments divided by headers or *diatonoi*; the result is a stronger wall that lends itself to modular construction (Figure 18.7).



Figure 18.7 Chain wall masonry, Aigosthena.

Source: S. Pope.

The pioneering techniques, set into place with a new defensive mindset, may be seen in the early fourth-century BCE circuit wall at Syracuse. Dionysios I recognized the necessity of protecting the city from a threat that could come from the Epipolae plateau, located just above and to the west of the city, where a short while earlier Athenian forces had dug in against the Syracusans (Thuc. 6.96). He also saw the need for creating a refuge for the population of the *chora*. The result was a circuit wall that culminated at that strategic spot with a fortress that is now known as Castello Eurialo. The circuit wall came to be a celebrated enterprise, for writing later in the first century BCE, Diodorus Siculus gives a detailed account of its construction:

Wishing to complete the building of the walls rapidly, he gathered the peasants from the countryside, from whom he selected some sixty

thousand capable men and parceled out to them the space to be walled. For each *stade* he appointed a master-builder and for each *plethron* a mason, and the laborers from the common people assigned to the task numbered two hundred for each *plethron*. Besides these, other workers, a multitude in number, quarried out the rough stone, and six thousand yoke of oxen brought it to the appointed places ... [A]s a result, contrary to expectation, the wall was brought to completion in twenty days. It was thirty stades in length and of corresponding height, and the added strength of the wall made it impregnable to assault; for there were lofty towers at frequent intervals and it was constructed of stones four feet long and carefully joined. (Diod. Sic. 14.18.1–6)

The circuit comprises 1800 ha and runs roughly in a triangle from the Euryalos fortress eastward to the coastline (5.7 km), southward along the coast to the asty (7.8 km), and northwest back the high plateau (5.7 km). A study by the German Archaeological Institute in Rome has brought to light many details regarding its construction: along the western stretch postern gates (1.32 m wide) were placed at regular intervals of 34 m, which corresponds to one plethron or 100 Doric feet. Stretchers averaged $1.2 \times 0.5 \times 0.5$ m, corresponding to four Doric feet in length, indicating that there was a module in its design that facilitated construction. The height of the wall has been estimated at about 6 m (Mertens 2002: 251). Masonry chains appear at intervals of every two stretchers but also at 6–8 m, roughly corresponding to 10 and 20 Doric feet respectively, preserved on the south side (Karlsson 1992: 71). Seventeen towers were placed along the circuit: the towers are nearly square in plan and measure on average just over 10 m² at the foundation level; some include internal crosswalls in the form of a “T” (Karlsson 1992: 23–38; Mertens 2006: 426). Numerous gates have been identified along the walls: the so-called tripylon gate, near the Euryalos Fortress, and a “hexapylon,” which offered access to the district Tyche from the road north to Catania, are complemented by six gates (a few of them *dipyla* or double) that allowed the residents of the chora to take refuge within the city walls in moments of distress (Mertens 2002: 247; 2006: 427). Although the enthusiastic account of Diodorus perhaps should not be taken literally, the archaeological evidence indicates that there is uniformity across the construction and a consistent plan that reflects an exceptional workforce and organization of labor. The uniformity of masonry style and consistency of construction (2.6 m wide in numerous stretches) indicates that the circuit was built in a short period beginning in 401 BCE.

The Late Classical Period on the Greek Mainland

Walls of similar size, extent, and construction appeared in the Greek mainland

in the first half of the fourth century BCE, probably influenced directly by Dionysios' walls in Sicily. Following the Theban victory at Leuctra in 371 BCE, Epaminondas fortified Messene, Mantinea, and Megalopolis with large circuit walls, embodying the concept of *Gelandemauren* in their lengthy configurations and marking the first widespread use of all-masonry walls on the Greek mainland. The circuit at Messene runs 9.5 km and encloses 290 ha; it is constructed in two masonry styles: isodomic ashlar east of the Arcadian gate and isodomic trapezoidal west of the gate (Figure 18.8). It is 2.6–2.7 m wide, built in the emplekton technique, and demonstrates masonry chains set at 3.0–3.3 m intervals (Karlsson 1992: 74). Square (5–6 m per side) and semicircular towers are located at irregular intervals (30–90 m) along the course of the wall. The towers (9–13 m high) are built with enclosed spaces that were punctuated with small pentagonal windows, which allowed for catapults to project out of the tower. Small doors in the towers gave access to the parados placed behind crenellated parapets. The most impressive aspect of the wall is the Arcadian Gate located on the north side: it is built with a circular forecourt (19 m in diameter) and flanked by two square towers on the external side (Paus. 4.27.9; 10.36.5). The walls at Mantinea and Megalopolis are less well preserved but demonstrate similar construction, which suggests that they too are contemporary with Epaminondas. The city wall at Megalopolis, though poorly preserved, extends 8.8 km and is constructed with sub-ashlar blocks, rubble fill, and crosswall blocks placed at intervals (Karlsson 1992: 74). At Mantinea, trapezoidal masonry approached the regularity of ashlar, headers placed at regular intervals. The 4-km circuit wall contained 128 exterior bastions, placed at intervals of 33 m.

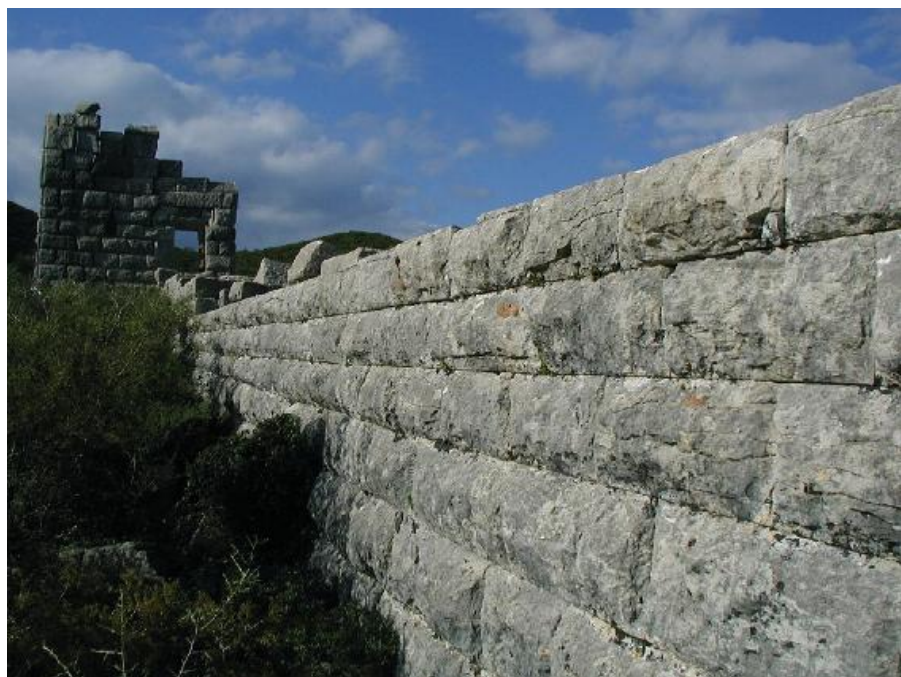


Figure 18.8 Curtain wall, Messene.

Source: S. Pope.

These constructions inspired a number of small, enclosed fortified outposts located near borders and at strategic coastal positions. These forts defended the chora, controlled a road, or protected a vulnerable stretch of coastline; each was designed to hold a garrison of troops and was adorned with multiple towers for vigilance of the surrounding countryside. The fortress at Gyphtokastro, on the border between Attica and Boeotia, identified as ancient Eleutherai, runs approximately 275 by approximately 100 m and contains 12 towers, many of which have interior stairs that lead to the wall-walk running the entire circuit (Figure 18.9). The fortress dates to the middle years of the fourth century BCE; its authorship is greatly debated: Athenian or Boeotian. (J. Ober (1985) and M. Munn (1993) discuss the fortress as part of Athenian defensive strategy, but then J. Camp (1991; 2000) and F. Cooper (2001) view the border forts as a Boeotian construction. Most recently S. Fachard (2013) has again argued for Boeotian construction.) Certainly belonging to Athens is the fort at Phyle, a roughly pentagonal circuit carried out with ashlar block and masonry chains that has four preserved towers, of which one is semicircular. Located near the coast of the Gulf of Corinth, the rectangular (550 × 180 m) fort at Aigosthena is constructed using trapezoidal masonry for the curtain wall and ashlar isodomic for its eight towers (9–18 m high) (Figure 18.10). Fortifications were built at this time at other Attic demes including Sounion, Siphae, Oinoe, and Rhamnous.



Figure 18.9 Curtain wall with towers, Gyphokastro.

Source: S. Pope.



Figure 18.10 View of walls, Aigosthena.

Source: S. Pope.

Hellenistic Fortifications

The Hellenistic Period saw incremental developments and small refinements that maximized defensive and offensive roles of fortification walls. Further attention was paid to keeping siege weaponry away from the walls themselves and enemies at a distance. In particular, the widespread use of mobile siege towers, which included battering rams, inspired a strategy that attempted to neutralize them before contact with the fortifications could be made. Ditches and other defensive outworks, including moats both empty and water-filled, were one line of defense and another was the use of projectile weapons fired from the walls themselves. With this, walls became the last rather than first line of defense. Few developments are found in the materials themselves. The outward aesthetics shift, as polygonal or trapezoidal masonry is replaced by pseudoisodomic, although there are many examples of different masonry styles used in the same circuit such as at Knidos. The arrangement of the *Gelandemaurer*, a wall containing vast tracks, continued to be used through the third century BCE. Demetrias had a curtain enclosing 200 ha; the circuit wall at Ephesos ran for 9 km. Within the long circuit, designs began to favor

a transversal wall, or *diateichisma*, that created a small enclosure at a strategic point designed to house a concentration of soldiers. Walls at Athens, Eretria, Stratos, Ilissos, Apollonia Illyria, Miletos, Herakleia-by-Latmos all included this feature (Figure 18.11). Rapid construction of the additional wall indicates the inconvenience of the large circuit for deploying troops. By the beginning of the second century BCE, circuits returned to a line closer to inhabited areas and fitted more closely around the asty. Examples of the reduced diameter wall include Dura-Europos, Perge, and Apollonia in Cyrene, where the stadium and Temple of Zeus are excluded from the circuit wall. Walls became wider: the parapet in wood was replaced by solid screen walls that fully enclosed the guarding troops, and the paved stone walkways were arrived at through stone stairs. Likewise, square towers are slowly replaced by semicircular, pentagonal, and hexagonal towers, eliminating or reducing corners, or with beveled corners as at Asine. In the second century BCE, round towers were used widely in Asia Minor. At the same time, offensive capacity of towers increased with rooms for artillery: both narrow slit windows for arrows, and larger openings above for propulsion catapults launching stones were employed. The towers at Assos and Herakleia demonstrate this differentiation by level.



Figure 18.11 View of walls and tower, Herakleia-by-Latmos.

Source: S. Pope.

A significant development in fortifications in the Hellenistic period is the use of a *proteichisma*, or outwork, consisting of ditches and built walls that presented a formidable barrier to the wall itself and a station for offensive weaponry. A notable example is found at Epipolae above Syracuse in the

Euryalos fortress. Completed under Agathocles, a simple bastion in the fourth-century Dionysian wall was expanded with offensive capability to include two interior courtyards and five towers which supported heavy stone-throwing artillery. The towers are preceded by an angular outwork that stood over the first of three moats. The moat (15 m wide by 80 m long) was connected by a series of underground tunnels used to evacuate fill that invaders would dump in them attempting to span the gap. Also under Agathocles, the *proteichisma* at Selinous consisted of an advanced wall in front of the circuit wall; at its lowest level 12 postern gates opened above a long ditch carved into bedrock. The three-story structure included a series of compartment-like rooms used for artillery; semicircular towers at either end expanded the defensive perimeter on the northern and western sides (Mertens 2003).

Gates were developed along with other aspects of walls. They were recessed within the wall and so created a courtyard; examples of courtyard gates are found at Priene and Messene. The fourth century BCE also saw development of the “pincer” gate: the actual gateway is recessed within the course of the wall, which then projects as two bastions in front of the gate itself. This arrangement forced attackers into a narrow trapezoid beneath the walls where they would have been vulnerable to soldiers above.

Harbors

Harbors, moles, breakwaters, and ship sheds were important elements of public architecture for the ports and harbors connecting Greek cities with the waterways of the Mediterranean. There is little evidence for construction of harbors in the Iron Age; however, many natural harbors were exploited by Greek cities: the features that make them most suitable are reefs or natural formations of rock that act as breakwaters. Natural rock formations could be exploited with rubble fill built up to lengthen the breakwater. Artificial breakwaters began as piled banks of stones; the quay and breakwater at Delos have been dated to the late eighth century BCE. The mole at Eretria measures 600m in length and was built on a seafloor to a height of at least 20 m ; it may have been constructed as early as the seventh century BCE (Blackman 1982: 19).

Artificial breakwaters were built with a sloped outer face so that waves would ride up it rather than delivering a direct impact. Designs and degrees of sophistication varied: a breakwater rising just to the surface would allow enough water movement to prevent siltation of the harbor. Otherwise, moles could be built up to provide the foundation for a fortification wall, quay, or other harbor structure. The earliest mole in ashlar masonry is found in the harbor installation at Samos, built under Polykrates (circa 530 BCE) and

marveled at by Herodotus: “the second is a breakwater in the sea enclosing the harbor, sunk one hundred and twenty feet, and more than twelve hundred feet in length” (Hdt. 3.60.3). Few remains survive, but certainly it was more developed than the roughly faced and paved rubble at Delos. At Knidos, the mole is 30 m high and was built of roughly cut blocks, probably in the fourth century BCE.

Quays are platforms built alongside or projecting into water, used for loading or unloading ships. From the Classical period, cranes were used on the quayside to facilitate movement of goods into and out of cargo ships. Enclosure walls built on top of a mole would fulfill the second objective of forming a breakwater: protecting the harbor against attack. Numerous cities from the Classical period onward often extended fortification walls around their harbors and out along moles, ending with towers that also functioned as lighthouses. The towers often created a type of “sea gate” that was closed with chains, cables, or booms. The maximum width in the Classical period was 100 m, but many had much smaller entryways: Lechaion’s was 14 m, and Halies had a 20-m gate, which was later reduced to 7 m, a bare minimum width. These harbors must have been the *kleistos limnos* (closed harbors) described by Strabo (17.1.6). Thasos, Oiniadai, Athens, Megara, and Corinth all had fortification walls around their harbors. Simultaneously, the Phoenicians developed the artificial harbor, or *cothon*, usually rectangular in outline. A well-preserved example at Motya, a small island used as a base by the Carthaginians, dates to the sixth century BCE; its precise use as a harbor is debated, as Motya also had a dry dock (Tusa 2004).

Most Greek cities had an outlet to the sea, even if the city was not located on the coast. The out-port, or *epineion*, was considered part of the city, even if physically remote from the asty. Long walls could connect the harbor to the city as at Athens, Megara, and Corinth. In the case of Athens, Piraeus grew into a vibrant residential area complete with its own urban grid. By the start of the fifth century BCE, most coastal Greek cities had multiple harbors or ports with multiple harbors. The rise and development of the trireme and the supremacy of naval powers necessitated specialized harbors and defensive installations. Piraeus had three ports: by the middle of the fifth century BCE, Zea and Munichia were both military ports, while the largest, Kantharos, was primarily commercial, but it did have ship sheds located within it, indicating the presence of triremes. Cyrene had ports Apollonia (18 km from the city, which had its own fortification walls) and Phykos. Corcyra’s commercial port, Alkinoös, was located closer to the agora, while Hyllaikos was at first both commercial and military, later solely military. Thasos had both a naval harbor and a commercial harbor, quite close to one another, and traces of the harbors may still be seen underwater. Syracuse, Thasos, and Mytilene had three harbors each; Aigina and Knidos had two ports each, as did Corinth with Kenchreae, on the Saronic Gulf, and Lechaion, on the Gulf of Corinth. The

two were connected by an overland portage route known as the *diolkos* across which ships were hauled, which consisted of flat river stones that paved a pathway across the isthmus.

Ship Sheds

As the trireme grew in importance in Greek warfare, navies from many Greek states proliferated. The cutting-edge qualities that made the ship an effective weapon also made it vulnerable to the deteriorating forces of natural elements. To circumvent this, *neosoikoi* or *neoria* (ship sheds; sometimes used to refer to naval arsenals) developed as an architectural type (Blackman and Rankov 2014). The ship shed is a long, narrow, roofed hall, wide enough to house a ship; architecturally it is similar to a stoa, but it is accessed principally from the end rather than along the side. With a sloping slipway, its face opened to the sea to receive triremes either manually hauled into it or pulled in with the assistance of capstans. The purpose was to provide shelter for the ships while they were drying out. A waterlogged trireme would lose its speed and efficiency, so that drying out the ships was a crucial element in the maintenance of the navy.

Ship sheds are first attested in the written record at Samos (Hdt. 3.39, 3.44–45), and while they have not yet been uncovered at Samos, remains of other ship sheds from the early fifth century have been found at Corcyra, Abdera, Thasos, and Aigina. At Corcyra, each of the two ports was adorned with ship sheds; Alkinoös has yielded five ship sheds dated to the end of the sixth or beginning of the fifth century BCE. In the first half of the fifth century, the time of its military apex, as many as 120 slipways (each 5.4–5.5 m wide) were used between this harbor and neighboring Hyllaikos, which developed into the military harbor. The ship sheds at Thasos are contemporary with the fortifications of the port and date to the first half of the fifth century BCE. Located in the northeast corner of the harbor, a schist-slab foundation corresponds to a room 44 × 19 m long: the room could hold three triremes (6 m for each). The ship shed has been reconstructed with a single gabled roof covering the three bays. A second set of foundations immediately to the south indicate that the excavated example was likely one of a series that ran around three sides of the port, providing a total of 50 slipways (Simossi 1994; Hellmann 2010: 369).

Excavations at Sicilian Naxos have yielded another example of ship sheds from the fifth century BCE (Blackman and Lentini 2003). Located on a gently curving piece of coastline at the northern border of the city, the ship sheds at Naxos place the naval harbor at the edge of the city, in close proximity (at 25 m) to the closure of the fortification wall and also at the northernmost position in the city. The ship sheds contained four slipways ranging from 5.74 to 5.24

m wide; excavated only to an extant length of about 28 m, their total restored length was likely greater (Figure 18.12).

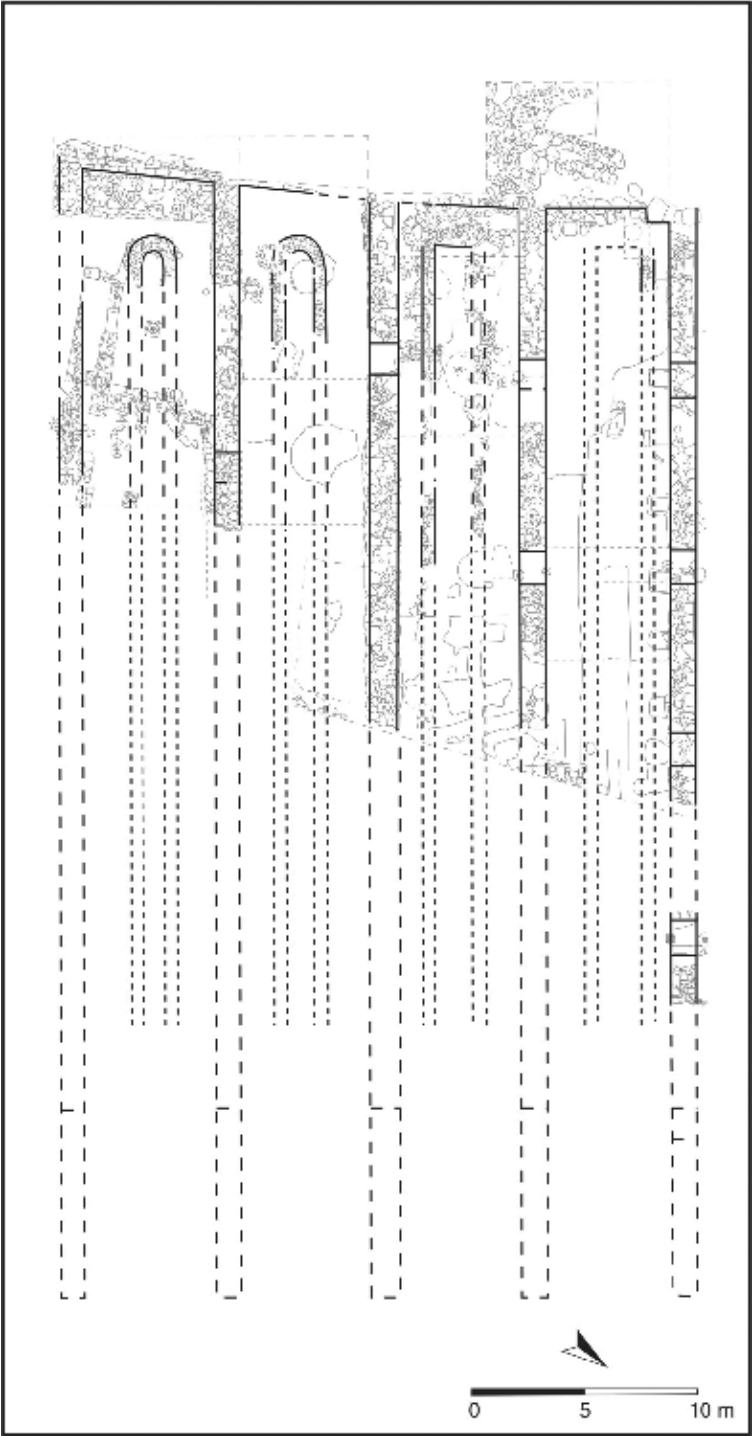


Figure 18.12 Ship shed, Naxos, plan.

Source: Mariangela Barbato, adapted from M.C. Lentini, D. Blackman and J. Pakkanen, 2008.

The excavations of the slipways revealed unique features: sand ramps. Sand was piled directly onto bedrock or onto hard packed clay and was contained within a set of low retaining walls placed in the middle of the slipway. The sand ramps were likely to have been covered with wooden planks over which the ships were hauled into place within the arsenal. The presence of sand inside the slipways indicates that the building was roofed. Roof tiles and other architectural terracottas found in the course of excavation provide evidence for the reconstruction of the roof. Excavations also revealed that there were no provisions for timber posts used to support the roof, in the way, for example, that stone bases were used at Kition (Yon 2000: 108). The stone dividing walls were built in a polygonal style, with large blocks in volcanic basalt, while the closure wall was of roughly coursed construction. Each of the walls had a mudbrick portion built above, which supported wooden posts rising from this course to support the roofbeams (Figure 18.13). This system would allow a roof of up to 10 m in height and guaranteed the exchange of air, thanks to the height of the posts rising above the mudbrick walls. The posts support a roof that consists of two gables, each spanning two slipways; the central dividing wall supported the two discrete roofs as well as a narrow terracotta drainage channel (*guttus*) between them that evacuated water downhill to the southern façade of the building. The slope of the building (12% grade) was managed by dividing the roof into three sections longitudinally, each rising slightly above the previous portion to create a type of terracing. This arrangement had the added benefit of allowing for air circulation and expedited drying within the ship shed.

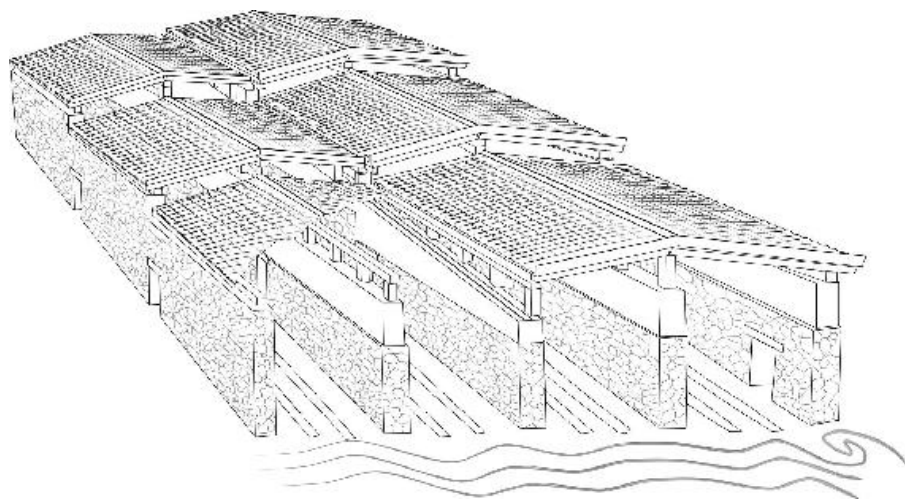


Figure 18.13 Ship shed, Naxos, reconstruction drawing.

The roof of the Naxian ship sheds had two phases; during both of them terracotta roof tiles with antefixes at the eaves line were used for the covering. The earlier roof follows the Sicilian type, with antefixes depicting Silenus and gorgoneion, motifs usually found in the decoration of temples. The second roofing phase is dated to circa 460–400 BCE and is composed of pan tiles and faceted cover tiles of the Corinthian type.

The ship shed with four slipways was useful for a smaller Greek polis such as Naxos. It is ten times larger than any single religious building excavated to date at the site, and is therefore the most monumental civic structure known at the polis. Pottery finds within it dating to the late sixth century BCE suggest that the construction actually predates the destruction of the Naxos by Hippokrates, tyrant of Gela, who captured the city in 494 BCE. If the dating is correct, the ship sheds seem to have survived and were instrumental in the development of the Classical period city, giving orientation to the Classical period grid with which it is aligned. All in all, the building was decorated like a temple, saved from destruction and became a cornerstone of the new urban grid, all of which indicate its value beyond its function as a key element in the urban fabric of Naxos.

Nowhere were ship sheds more important in the Greek world than at Piraeus: in an inscription dated to the fourth century BCE, magistrates record 372 ship sheds spread across the three harbors, 196 of them in the military harbor Zea (IG II² 1627 398–405). Excavations in the cove revealed rock-cut ramps measuring 50 m in length and 6.3–6.5 m in width, with a slope less than 12%; each slipway was separated by rectangular bases that supported a wooden gabled roof. In 347/6 BCE, the construction of a new naval arsenal designed by the architect Philon was undertaken; the building was detailed in a marble inscription (IG II² 1668) that extended for 98 lines and included a graphic representation. The building was celebrated in antiquity by numerous authors, including Vitruvius, and it appears on some wonder-lists as a “wonder” of the world; the foundations for one end and part of its center have been found (Vitr. *De arch.* 7.praef.12; Steinhauer 1996). The arsenal was built between the agora and the ship sheds, northeast of the gulf of Zea: it measured 18 m wide and 130 m long and had entrances on both of its narrow sides and colonnades that divided the interior space into three aisles. The central aisle extended the entire length of the building, while the side aisles were separated into 34 compartments each, with overhead lofts for additional storage space. Its purpose was to provide storage space for sails and naval tackle, but ancient references make it clear that people could stroll its length in the shady extent of the building and contemplate the strong resources of the city.

Other notable installations include those at Syracuse, which had 310 ship sheds at the start of the fourth century BCE (Diod. Sic. 14.35.2). Carthage had

220 ship sheds in the third century BCE (Hurst 1979). Smaller installations, usually rock-cut, with single or two slipways, are known from Sounion, Oiniadai, Trypeti near Siteia on Crete, and Massalia, which had both open-air slipways and roofed ship sheds. Although these installations are often at least partly submerged because of the changes in sea level and coastal lines since antiquity, they nonetheless attest to the significance of these facilities for the security of ancient cities. Just as fine stone fortifications demarcated the landscape on land around a city and proclaimed its strength on land, the harbors and ship sheds held the key to prosperity and protection by sea.

FURTHER READING

Seminal works on the construction techniques of Greek fortifications include Martin 1965 and Orlandos 1966. On Greek fortifications more broadly, see Winter 1971, Garland 1974, Lawrence 1979, McNicoll 1997, Hellmann 2010, and Frederiksen 2011. For defensive settlements, see Karageorghis and Morris 2001. Recently, the work of Fachard has proved invaluable for our understanding of the border forts of Attica 2014 and www.bordersofattica.org. Interest in ship sheds has grown lately: see Blackman and Rankov 2014, which also includes relevant information on Greek harbors; for the ships, Casson 1996.

REFERENCES

- Adam, J.-P. 1982. *L'Architecture militaire grecque*. Paris.
- Beltrame, C. ed. 2003. *Boats, Ships and Shipyards*: Ninth International Symposium on Boat and Ship Archaeology. Oxford.
- Blackman, D. 1982. "Ancient Harbours in the Mediterranean." *International Journal of Nautical Archaeology and Underwater Exploration*, 11: 79–104, part 1; 185–211 part 2.
- Blackman, D. and M.C. Lentini. 2003. "The Ship sheds of Sicilian Naxos, Researches 1998–2001: A Preliminary Report." *BSA*, 98: 387–435.
- Blackman, D. and B. Rankov, eds. 2014. *Ship Sheds of the Ancient Mediterranean*. Cambridge.
- Bonacasa, N., L. Braccesi, and E. DeMiro, eds. 2002. *La Sicilia dei Due Dionisî*. Rome.
- Camp, J. McK. 1991. "Notes on the Towers and Borders of Classical Boiotia." *AJA*, 95: 193–202.

- Camp, J. McK. 2000. "Walls and the Polis." In Flensted-Jensen, Nielsen, and Rubenstein, eds., 41–57.
- Campbell, D. 2011. "Ancient Catapults: Some Hypotheses Reexamined." *Hesperia*, 80: 677–700.
- Casson, L. 1996. *Ships and Seamanship in the Ancient World*. Princeton.
- Conwell, D. 2008. *Connecting the City to the Sea*. Leiden.
- Cooper, F. 2001. "The Fortifications of Epaminondas and the Rise of the Monumental Greek City." In Tracy, ed., 155–191.
- d'Agostino, B., F. Fratta, and V. Malpede. 2005. *Cuma: Le Fortificazioni I. Lo scavo 1994–2002*. Naples.
- Fachard, S. 2013. "Eleutherai as the Gates to Boeotia." *Revue des Etudes Militaires Anciennes*, 6: 81–106.
- Flensted-Jensen, P., T.H. Nielsen, and L. Rubenstein, eds. 2000. *Polis and Politics: Studies in Ancient Greek History Presented to M. H. Hansen on his 60th Birthday*. Copenhagen.
- Frederiksen, R. 2011. *Greek City Walls of the Archaic Period, 900–480 BC*. Oxford.
- Garlan, Y. 1974. *Recherches de poliorcétique grecque*. Paris.
- Hansen, M.H. and T.H. Nielsen, eds. 2004. *An Inventory of Archaic and Classical Poleis*. Oxford.
- Hellmann, M.C. 2010. *L'Architecture Grecque. 3: Habitat, urbanisme et fortifications*. Paris.
- Hurst, H.R. 1979. *Excavations of Carthage: The British Mission. Vol. II.1: The Circular Harbour, North Side*. London.
- Karageorghis, V. and C.E. Morris, eds. 2001. *Defensive Settlements of the Aegean and the Eastern Mediterranean after c. 1200 B.C.* Nicosia.
- Karlsson, L. 1992. *Fortifications Towers and Masonry Techniques in the Hegemony of Syracuse, 405–211 BC*. Stockholm.
- Kinzl, K.H., ed. 2006. *A Companion to the Classical Greek World*. Oxford.
- Lawrence, A.W. 1979. *Greek Aims in Fortifications*. Oxford: Clarendon.
- Lee, J.W.I. 2006. "Warfare in the Classical Age." in Kinzl, ed., 480–

Lentini, M.C., D. Blackman, and J. Pakkanen. 2008. "The Shipsheds of Sicilian Naxos: A Second Preliminary Report 2003–6." *BSA*, 103: 299–366.

Martin, R. 1965. *Manuel d'architecture grecque. I: Matériaux et techniques*. Paris.

McNicoll, A.W. 1997. *Hellenistic Fortifications from the Aegean to the Euphrates*. Oxford.

Mertens, D. 2002. "Le Lunghe Mura di Dionigi I a Siracusa." In Bonacasa, Braccesi, and DeMiro, eds., 243–252.

Mertens, D. 2003. *Selinus I: Die Stadt und ihre Mauern*. Mainz am Rhein.

Mertens, D. 2006. *Städte und Bauten der Westgriechen: Von der Kolonisation bis zur Krise am Ende des 5 Jh. V. Chr.* Munich.

Munn, M. 1993. *The Defense of Attica, The Dema Wall and the Boiotian War of 378–375 B.C.* Berkeley.

Nicholls, R.V. 1958–1959. "Old Smyrna: The Iron Age Fortifications and Associated Remains on the City Perimeter." *BSA*, 53–54: 35–137.

Nigro, L., ed. 2004. *Mozia X: Rapporto preliminare della CCII campagna di scavi*. Rome.

Ober, J. 1985. *Fortress Attica: Defense of the Athenian Land Frontier 404–322 BC*. Leiden.

Orlandos, A.K. 1966. *Les Matériaux de construction, et la technique architecturale des anciens grecs: Première partie*. Paris.

Scranton, R.L. 1941. *Greek Walls* Cambridge.

Simossi, A. 1994. "Το αρχαίο πολεμικὸ λιμάνι της Θάσου." *Αρχαιολογικόν Δελτίον*, 49–50: 133–160.

Steinhauer, G.A. 1996. "La Découverte de l'arsenal de Philon." In Tzalas ed., 471–480.

Theocharaki, A.M. 2011. "The Ancient Circuit Wall of Athens: Its Changing Course and the Phases of Construction." *Hesperia*, 81: 71–156.

Tomlinson R.A. 1961. "Emplekton Masonry and `Greek Structura.'" *JHS*, 81: 133–140.

Tracy, J., ed. 2001. *City Walls: The Urban Enceinte in Global Perspective*. Cambridge.

Tusa, S. 2004. "Il sistema portuale di Mozia: il Kothon," in Nigro, ed., 445–464.

Tzalas, H. ed. 1996. *Tropis IV*. Proceedings of the Fourth International Symposium on Ship Construction in Antiquity. Athens.

von Gerkan, A. 1924. *Griechische Stadteanlagen, Untersuchungen zur Entwicklung des Stadtebaues im Altertum*. Berlin.

Williams, C.K. 1982. "The Early Urbanization of Corinth." *ASAA*, 60: 9–20.

Winter, F.E. 1971. *Greek Fortifications*. Toronto.

Yon, M. 2000. "Les Hangars du port chypre-phénicien de Kition." *Syria*, 77: 95–116.

CHAPTER 19

The Architecture of Greek Houses

Barbara Tsakirgis

It is a simple fact that there were more houses in a Greek city than there were public buildings. While the agora or the acropolis might be occupied with grander and architecturally more complex buildings, both the civic center and the sacred spaces were surrounded by houses. It was in the houses that the Greeks, and especially Greek women, spent the better part of their lives, and it was here that traces remain of many of the aspects of Greek life studied by scholars in public settings. Consequently, in domestic architecture we can find information about Greek religion, the economy, and other aspects of social life.

Houses have been neglected in scholarship until the past few decades, and the reason lies in their size, preservation, and perceived architectural merit. The impressive construction of many public buildings and the incomparable sculptural programs of Greek temples are of far greater artistic merit than the humble domestic architecture, but from at least the late Classical period onward, the domestic sphere featured interior decoration of considerable aesthetic quality. Temples and other public edifices were often built of large blocks of carefully cut stone, material that has survived better than the less durable materials used in house walls. Yet scholarly neglect of houses arose not just because of quality but also because of the linking of public buildings (temples and stoas) to the surviving works of literature from Classical antiquity. The buildings recognized as the locations where Athena was honored in the Panathenaic festival or where Socrates was tried for impiety provide a sense of immediacy, and they have interested scholars and the lay public who want to visualize where the actions of Pericles, Plato, and Pausanias were played out.

That domestic architecture could tell us more about the social and cultural habits of the Greeks was first clearly expressed by Michael Jameson in two articles (1990a; 1990b). Building on the work of social scientists, Jameson proposed that houses themselves had much to say about the lives of men and women, the conduct of cult, and even the economy of both the domestic unit and the city itself. In some ways, Jameson's realization was a return to the idea of Aristotle himself, who said (*Pol.* 1.1.6 (1252b)) that the *oikos* is part of the *polis* and in its social structure reflects that of the polis.

Construction and Materials

While the construction materials and techniques of any building depend on regionally available resources, there are some commonalities that can be recognized in the structure of Greek domestic architecture. Because personal, rather than public, resources went into the building of Greek houses, mudbrick (adobe) walls laid on a socle of stone rubble were the norm throughout the Archaic, Classical, and Hellenistic periods. The stone socles prevented the mudbrick from wicking water from the ground, and the eaves of the houses (no longer extant) would have kept the walls dry from above. A coating of plaster on the exterior of the wall would have provided further weather-proofing. Mudbricks were a preferred building material because they could be fashioned from readily available materials (i.e., earth, water, and straw), and specialists were not required for making the bricks as they were for cutting stone blocks. Mudbrick is an excellent insulator, allowing a building to stay cool in the hot Mediterranean summer and warm in the winter, when houses were heated by hearths or charcoal braziers. In the late Classical and Hellenistic periods, socles built of large square-cut blocks found some favor, and here, as in the interior appointments, we may see techniques and forms already used in public architecture and now borrowed into the private sphere.

Walls built entirely of stone were not unknown in Greek domestic buildings. The well-preserved late Classical houses at Orraon in Molossia ([Figure 19.1](#) and [Figure 19.2](#)) and at Dystos on Euboea, as well as the late Hellenistic houses on Delos show that in some places, builders chose stone instead of mudbrick for their house walls. At Orraon the motivation for the durable material may have been the wetter local climate, but no such problem existed on arid Delos. Evidence for upper stories exists at all three sites, but the desire to build a second story on the houses is not a factor in the choice of stone for the walls either; upper stories existed in mudbrick houses, but we know of the upper stories of the houses at Orraon, Dystos, and Delos precisely because of the stone used in their construction. Ultimately, the choice to build the walls entirely of stone was probably made because of the abundant local material, including the gneiss on Delos that breaks in convenient horizontal layers.

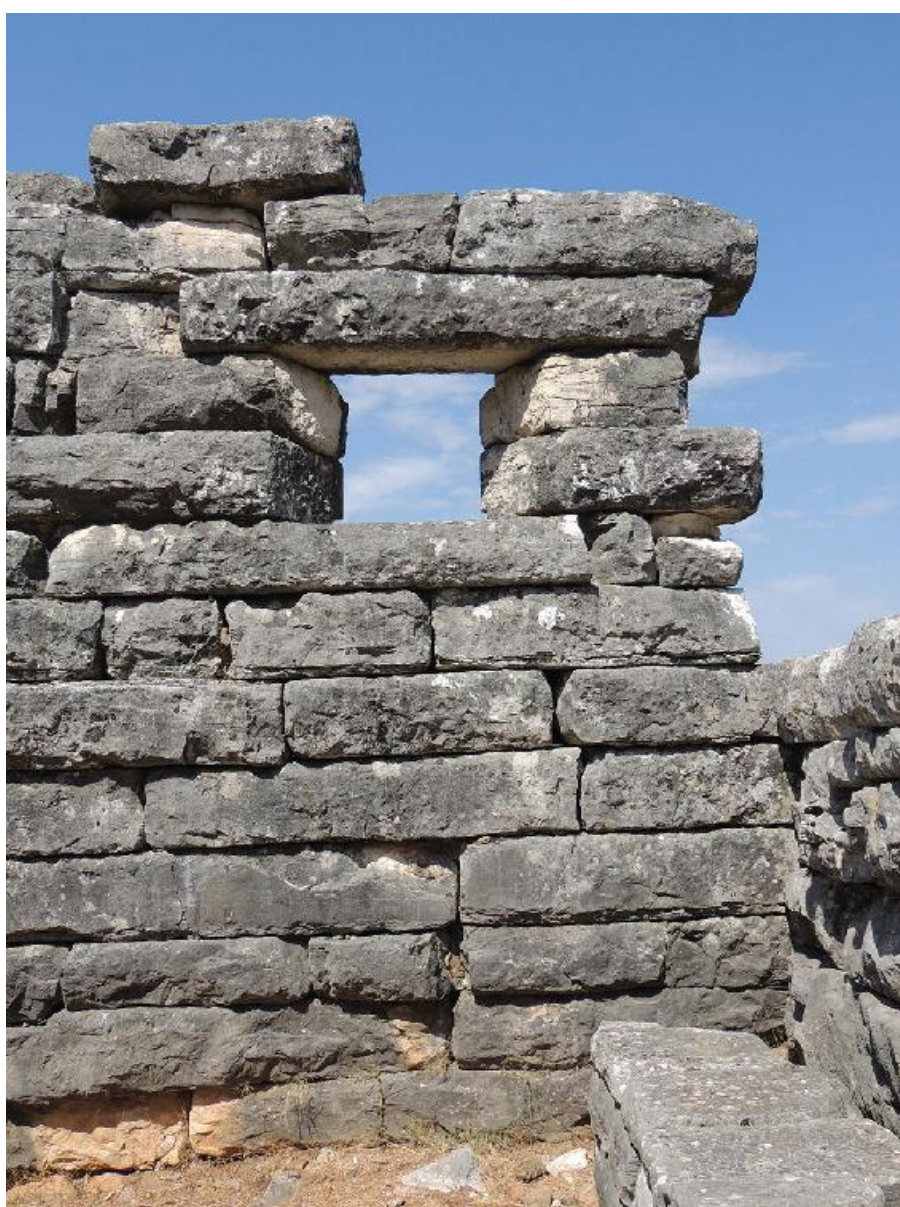


Figure 19.1 Orraon, andron, House A, stone construction and window.

Source: B. Tsakirgis.



Figure 19.2 Orraon, House A.

Source: M.M. Miles.

Wood was used sparingly in house construction. Wood's high cost was due to its scarcity in much of Greece, and it is attested by several ancient notices (e.g., *IG II*² 249.11–14, 30–37) that doors and window shutters were considered part of the movable property of the house (Tsakirgis 2010). Window and doorframes, the construction of the floors of the upper stories, and roof beams were also wooden. It was not necessary to craft the beams, rafters, and floor joists in houses from the stout cedars from Lebanon imported for temple construction. Varieties of trees which produced shorter and narrower trunks would have sufficed, as long as the timbers were closely spaced.

Throughout the Classical and Hellenistic periods, terracotta roofs were the norm in house construction. Corinthian roofs were little used on houses; the norm for domestic roof tiles was the curved Laconian type (see [Chapter 4](#)). A roof tile standard recovered from the excavations of the Athenian Agora probably served to ensure that the tiles were mass-produced to a standard that was recognized in contemporaneous construction (first century BCE, [Figure 19.3](#)). Based both on modern parallels and on ancient citations for events such as the Adoneia in Athens, which took place on the roof, some scholars have restored flat roofs on parts or all of Greek houses. The support for these restorations comes also from the absence of roof tiles in some excavated houses. Houses at sites on the arid Cycladic islands (e.g., Xobourgo on Tinos

and Zagora on Andros) probably had flat roofs.

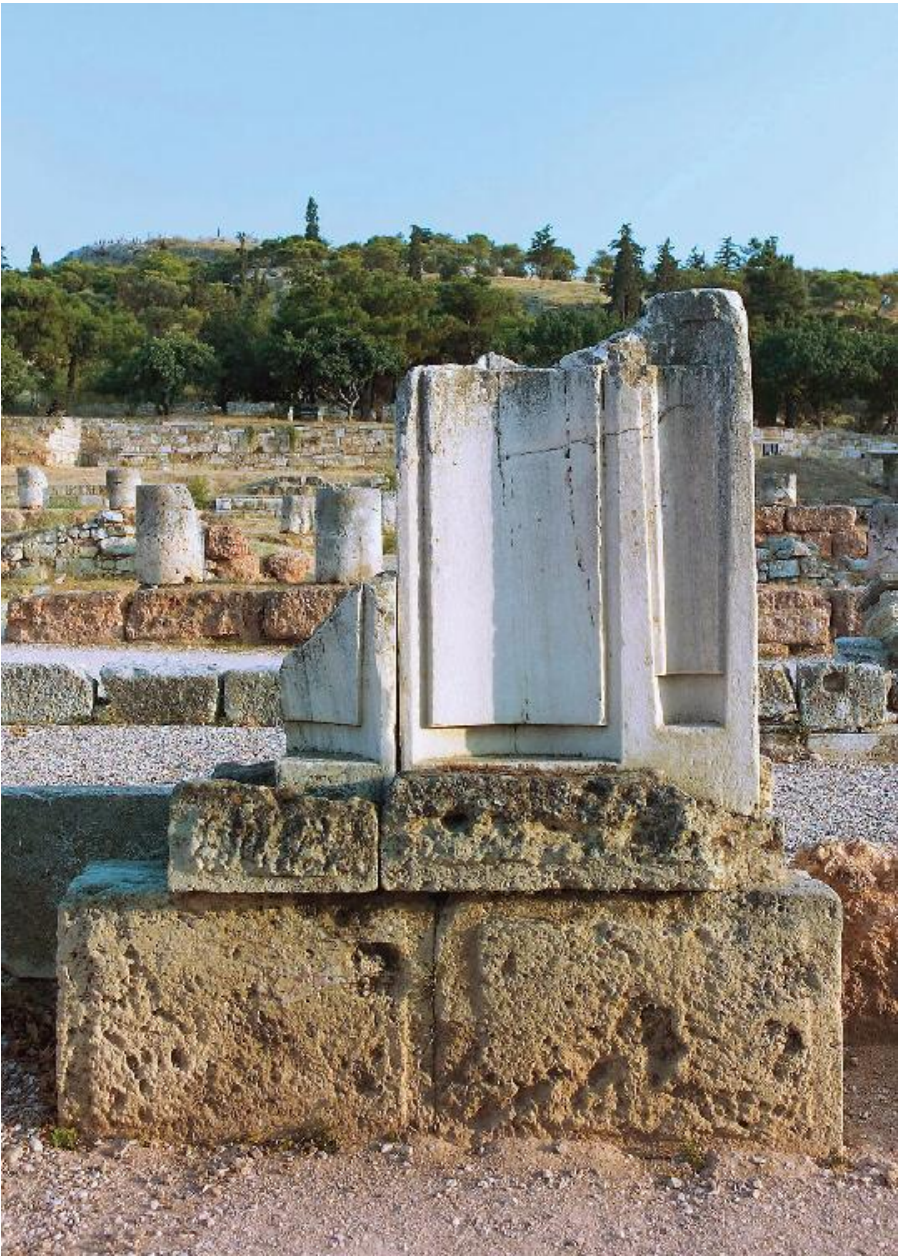


Figure 19.3 Tile standard, Athenian Agora. Courtesy of The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

Who built Greek houses is not a question that can be easily answered. Xenophon's Socrates (*Symp.* 4.4) mentions professional house builders in Classical Athens, and several papyri in the Zenon archive suggest that they

existed as well in Hellenistic Egypt. No surviving documents detail the hiring of professionals to build houses, and we cannot discount the possibility that homeowners had an active role in building their own houses. In his study of the construction techniques evident in the houses at Olynthos, Nicholas Cahill (2002: 203) suggests that families built the blocks of houses in which they lived together, using rubble and easily fashioned mudbricks.

Metal was necessary for some elements of the house, but few such fittings are extant. Because metal could be and was recycled, the bronze and iron used in house construction have been recovered only in chance finds. Iron nails were used to fasten the purlins of doors and shutters, and bronze bosses decorated the exterior of both. In Hellenistic houses, bronze latch plates, keyholes, and pivot plates were also used. The scarcity of nails in excavated houses probably indicates that the woodwork of the roofs was joined with pegs rather than with metal. The metal door fittings provided both real and perceived security in the houses and may also have served as signals of the wealth of the homeowner who could afford the expensive material in the construction and adornment of his home.

Houses and the Urban Environment

Within the polis, residential areas were often fairly densely built. Even in communities without an orthogonal grid of streets (e.g., early Archaic Zagora on Andros, Classical Athens, or Hellenistic Delos), party walls were the norm in house construction. This filling in of the urban landscape left little or no room for exterior yards. The need of homeowners to maintain and to protect shared house walls is seen in the Pergamene law of the *astynomoi*, a legal code of the second century BCE preserved in a second-century CE Roman copy (*OSIG* 483, *SEG* XIII.521). This document is a valuable source for many aspects of residential life in Pergamon at the time of King Eumenes II.

While histories of urban planning have long credited Hippodamos with the invention of the orthogonal grid of streets, archaeology has proven that the idea predates the fifth-century Milesian by at least 300 years (see [Chapter 17](#)). In the colonial Greek cities on Sicily, dating from the late eighth and seventh centuries BCE, grid-planned streets were the norm. The basic outlines of the houses built within these networks of streets were determined by the layout of the urban area, and in many of the colonial poleis there is evidence for an equal allotment of space to each householder. Usually the houses built in grid-planned cities had their main entrances off the narrow cross streets (*stenopoi*) rather than the broad avenues (*plateiai*). In the more developed cities, a longitudinal alley provided access and drainage for the houses in the block, and, in a few cities (e.g., Himera), the blocks were further provided with a lateral alley.

In many older cities, such as Athens, houses were built with respect to the preexisting street system, even if the line of those thoroughfares was not straight and resulted in house lots of quite varied size and shape. Excellent examples of this accommodation of the public right of way can be seen in the plans of the House of Simon and the House of Mikion and Menon (Figure 19.4) near the Athenian Agora; the street walls of both houses come to an uncomfortably acute angle where two preexisting roads run up and into the public square (Tsakirgis 2005). In planned cities, such as the colonies of Sicily and Olynthos, which was refounded by synoecism in the fifth century BCE, house lots were both regular in plan and equal in size. Such cities reveal careful planning on the part of their first residents, and both blocks of houses and the lots themselves were often laid out using multiples of a given foot length; even the width of the longitudinal alley of blocks in such cities was planned as a multiple of the chosen foot length.

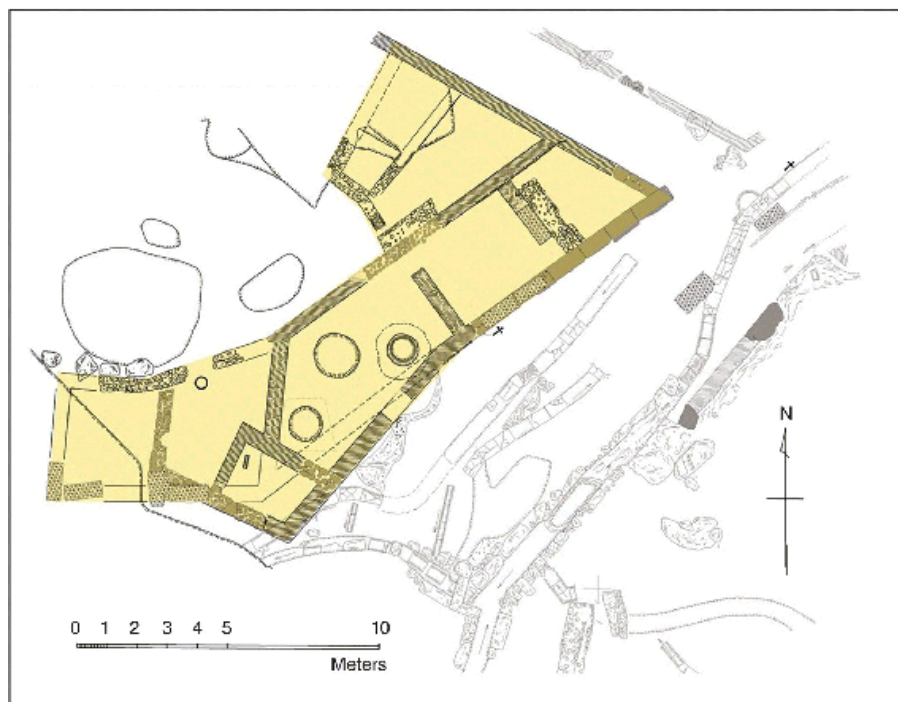


Figure 19.4 House of Mikion and Menon, Athens, plan. Courtesy of The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

The equal allotments of houses to the founding settlers of the Greek colonies has led W. Hoepfner and E.L. Schwandner to posit that the motivation for such allotments was the principle of *isonomia*, or equality under the law (1994, *passim*). While there may have been a political equality amongst the

colonists, soon after the foundations of many colonies much variation existed in the economic fortunes of the householders. At numerous planned Greek cities, original house lots were altered to accommodate the rise in one man's fortune and the fall of another's. At Olynthos, the equal house lots of the late fifth-century city were quickly divided to make some houses larger and others smaller (Figure 19.5).

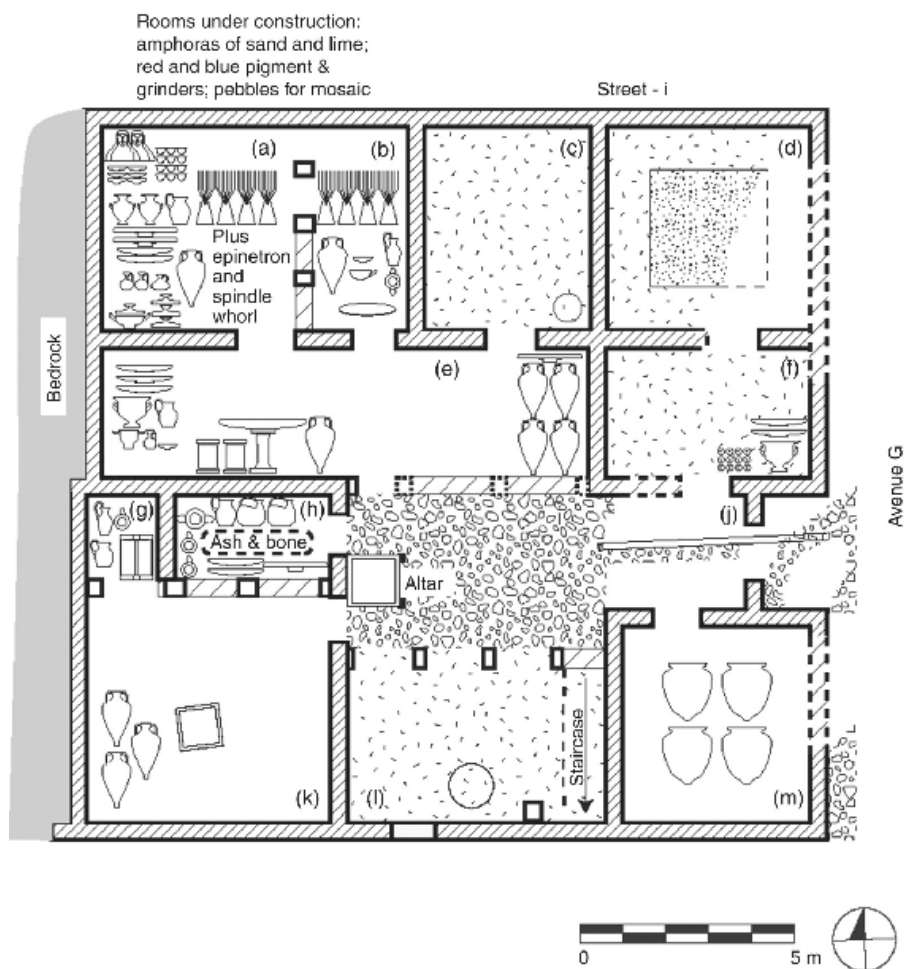


Figure 19.5 Olynthos, House of Many Colors, plan with distribution of finds.

Source: Courtesy N.D. Cahill.

Houses often shared their neighborhoods with shops and shrines. Just as stores today are placed to serve the needs of local residents, Greek shops were located at intersections, so that the merchants could best attract passersby. Four shops are located in a row on the West Hill at Morgantina, in a district densely built with Hellenistic houses (Tsakirgis forthcoming). One room, opening next to the street door of House C in the Industrial District of Athens (at the base of the Areopagus) may have been a shop (Figure 19.6, no. 12).

Little evidence exists to prove whether the residents of houses, which shared party walls with the shops, owned or operated the commercial establishments. The gods, too, could be neighbors, as Pindar (*Nem.* 7.86–94) attests, as shrines existed in many residential districts.

HOUSES D·C V CENTURY PRE-DRAIN

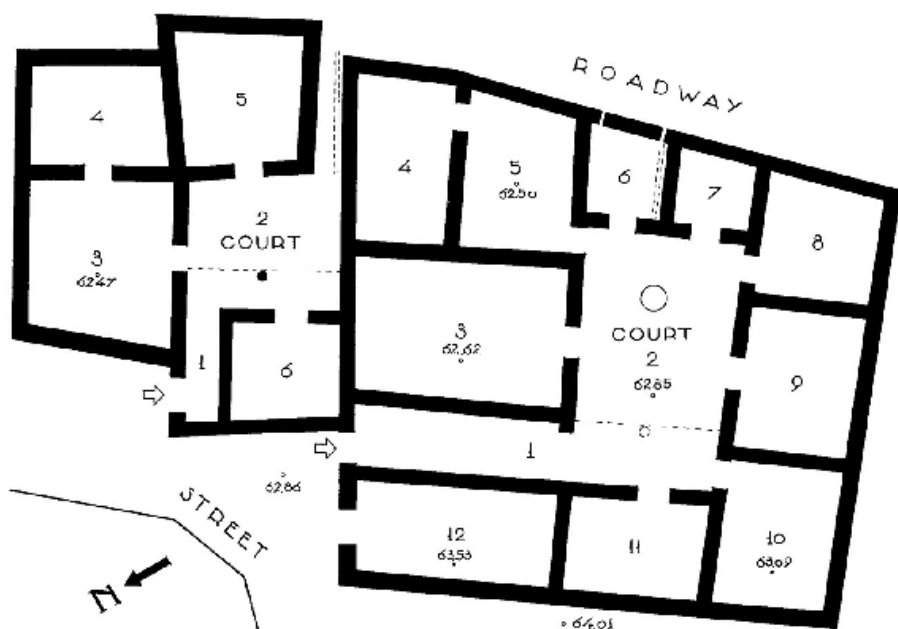


Figure 19.6 Houses C and D, Residential and Industrial District, Athens, plans. Courtesy of The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

The streets of the Greek city provided not only a means of access to houses, shops, and shrines but also a route of evacuation for excess water and sewage. Street drains were commonly fed by channels lined with stone or terracotta that exited under the threshold of the main entrances of houses. The excess water resulted from rainwater run-off from the unroofed courtyards of the houses, and, in Hellenistic houses, the water flushed the latrines commonly built just inside the houses, as seen at Delos and in some houses at Morgantina, Sicily (Trümper 1998: 63–64). The longitudinal alley in a block often accommodated additional drains that helped keep the houses dry. Because wastes of all types were flushed through the house drains and into the public system, Greek cities were probably rather smelly. That odor might have been further increased in cities in which *koprone*s, or stone-lined depressions, were placed in the street. *Koprone*s were cesspits, where waste of all sorts might be discarded, and they have been found in Athens, Halieis, and Thasos (Ault 2005: 63–65). Several characters in Attic comedy mention or

make use of the *kopron* (Eubulus' *Kerkopes*, cited by Ath. 10.417; probably Blepyros in Ar. *Eccl.* 320–322). Private contractors in Athens were hired to empty the cesspits and to carry the waste beyond the city walls.

The protection of urban thoroughfares from encroachment by private homeowners was legislated in many cities. The astynomic law from Pergamon cited earlier in the chapter is an example of such legal protection. In classical Athens (*Ath. Pol.* 50), the astynomoi were charged with protecting the public right of way; one focus of their attentions was on windows and balconies. An inscription from the northern island of Thasos provides for similar protection of the public streets (*SEG* XLII.785; Duchêne 1992).

While glass vessels had been produced in the Mediterranean region from the third millennium onward, flat panes of clear glass for windows were not made until the Roman period, and then first for public buildings, especially baths. Greek domestic windows were closed with wooden shutters, simply small versions of the usually double-leaved doors. Household security could be ensured by having few windows on the ground story, or at least by placing windows high in the walls ([Figure 19.1](#)). Security was enhanced with grilles, as can be seen in placements for metal bars in the street level window in the House of the Trident on Delos. Slit windows, such as in the house at Orraon or the House of the Doric Capital at Morgantina ([Figure 19.7](#), room 4), with a wider opening on the interior of the house, served to ventilate the interior and to prevent entry by unwanted intruders. Windows were doubtless a feature of houses, as stone window frames attest, and some were included in houses as more than sources of ventilation and illumination. The window frames, fashioned as miniature columns and found in numerous houses, show that the decorative architectural elements incorporated into the interiors of late Classical and Hellenistic houses appeared on the exterior as well.

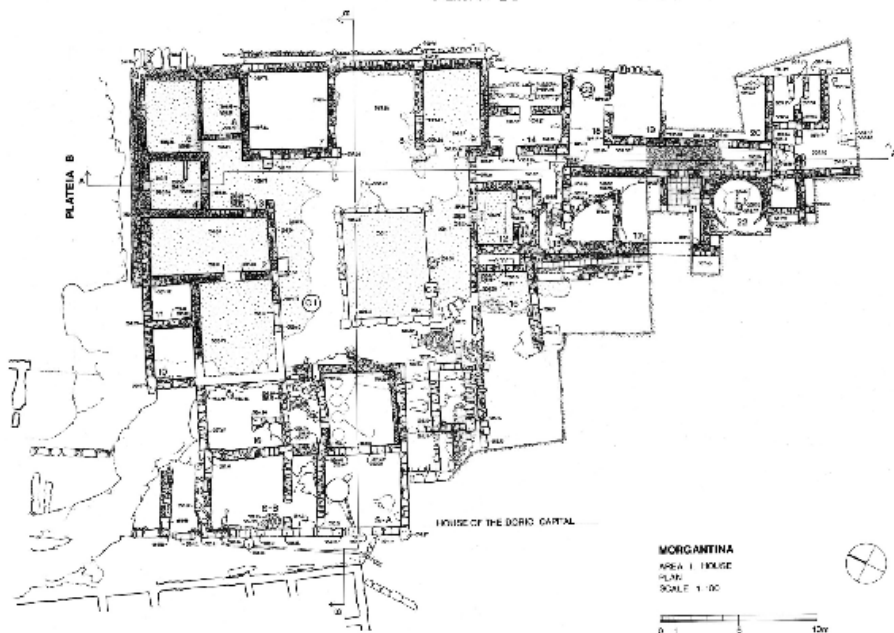


Figure 19.7 House of the Doric Capital, Morgantina, plan.

Source: American Excavations at Morgantina.

The main entrance into the Greek house was rarely embellished with large-scale architectural elements. In the Hellenistic period, some distinction was made to the primary street door, as we see from the pilasters on the wall outside the House of the Official at Morgantina, but the real focus of architectural elaboration was inside the house. Written sources (e.g. Thucydides 6.27–28) tell us that the doors of Athenian houses were marked by herms, symbolic of the god Hermes who served as a guardian of the liminal space. Far from seeking large carved stone herms in such positions, we should probably reconstruct these domestic markers as figurines of terracotta, wood, or stone placed in niches, or reliefs carved in the door jambs, or paintings on the same. Scenes of the *Lares compitales* painted on house façades at Delos give some idea of how the herms appeared to someone approaching a Greek house.

The Planning and Layout of the Greek House

In the fourth century BCE, both Xenophon (*Mem.* 3.8.8) and Pseudo-Aristotle (*Oec.* 1345a) prescribed that houses be built with a southern exposure so that in the winter months the sun could shine into the doors and, thus, warm the house. This environmentally conscious approach to domestic architecture is confirmed in the archaeological remains of many classical houses. The

heating of the rooms was probably enhanced by windows opening onto the interior court that let in even more sunlight in winter. In summer, when the sun was overhead, it would shine on the roof tiles, and, once courts were provided with surrounding porticoes, the entrances to the rooms were further shaded by the roofs of those covered passages.

Early Greek houses generally had few rooms, and the main living space was often accessed directly from the exterior. Beginning in the Classical period, vestibules were more commonly built in Greek houses (Figure 19.5, room j; Figure 19.6, both rooms 1). The vestibule of classical Greek houses served as a buffer to the outside world, discouraging both physical access and casual glances into the interior of the house. The development of this house plan has been recognized as responding to changing social practice in the Classical period and the desire to separate the private inner world of the home, especially as it pertains to women's life, from those not belonging to the family (Nevett 1999: 154–155). The separation from outsiders was effected not only by the vestibule itself but also by its alignment, often at right angles to that of the interior spaces. Doors or curtains probably provided additional barriers to any physical or visual intrusion into the private space.

In many ways, the courtyard was the defining characteristic of the Greek house (Figure 19.5, court 1; Figure 19.6, both courts 2). Many early houses (e.g., at Megara Hyblaia) were built facing south onto an open yard, showing that both the orientation of the rooms and their dependence on an unroofed space were features of Greek domestic architecture from an early date. From the Archaic period onward, the courtyard came to be included within the architecture of the house and was surrounded by either a perimeter wall or the rooms of the house. These alterations probably marked social changes occurring in the Greek world, as was the case with the vestibule. The resulting interior courtyard was, while unroofed, very much a living space for the family, and both domestic assemblages and literature show that many activities took place in the domestic courtyard. Tools for food preparation, altars, and loom weights attest to much daily activity in the courtyard, where children probably played and laundry might be hung to dry.

The courtyard served as more than a locus of human activity. Because of the relative absence of windows on the exterior of the house, the unroofed interior was a major source of ventilation and illumination for the rooms surrounding it. The windows that can be seen in the late Hellenistic houses at Delos or at Iaitas in Sicily in the courtyardside walls of many rooms enhanced the free flow of air. Light entered the rooms from the same source. For the inhabitants, the courtyard was a central node of access to the surrounding rooms, and the vast majority of rooms opened directly onto the courtyard or its porticoes. Suites of rooms do exist in Greek houses, but interior rooms are rarely more than two degrees removed from the courtyard. It is not surprising, given the tremendous importance of the courtyard, to find that it often had the greatest

size of any living space in the house.

Another very significant function of the courtyard was the provision of water to the Greek house, an important consideration in the dry climate of the Mediterranean region, particularly during the summer. In the early Iron and Archaic periods, wells were dug in the domestic courtyard to tap the water table, but increasingly, in later periods, cisterns were excavated below the courtyard or its porticoes to serve as storage for the water collected during the brief rainy months. Water would wash down the tiled roofs, which were sloped to the interior, and then would flow to the cistern or cisterns below. Courts were usually paved, in order to facilitate the collection of water and to ensure that little would be lost by soaking into the ground. Courts of Classical houses, like those at Olynthos or House C in the Industrial District of Athens (Figure 19.6), had cobbled paving, while some Hellenistic houses (e.g., Morgantina) were paved with terracotta tiles. In the Delian houses, polychrome mosaics were used to pave many domestic courtyards, but while the wealthy merchants there could afford this luxurious treatment, it was not the norm throughout the Greek world. Gardens planted in courtyards were not at all common in Greek houses, although there is some evidence that the domestic *paradeisos* (pleasure garden) was introduced into Hellenistic houses via the palaces of the successors of Alexander the Great (Nielsen 2001b).

The waterworks of the Greek house could be fairly advanced technologically but were rarely embellished with fountains or sculpture. In the Classical period, terracotta wellheads (puteals) were placed at the mouth of domestic wells to prevent injury to the inhabitants of the house. In the Hellenistic period in larger homes, the wellheads might be more elaborate, with marble examples found at Delos and a terracotta example adorned with architectural moldings in the House of the Arched Cistern at Morgantina. The stones forming the mouth of the well under House C in the Industrial District of Athens bear cuttings for a windlass used to lower vessels into the well; the marks on the marble wellheads at Delos give evidence of the ropes used to raise vessels in the wells. Hand- or foot-holds were cut into the well shafts for someone to climb in to clean the well or to retrieve a lost object. Most wells were cut into the rock underlying the houses, but some were lined with stones or with carefully crafted terracotta rings in which the footholds were fashioned. Cisterns were usually lined with a waterproof mortar and many were of a bell- or bottle-shape, to maximize the storage capacity of the cistern. Several houses in Hellenistic Athens were served by cisterns connected by tunnels underground, and similar connected cisterns appear in other Hellenistic houses. At Soluntum and Delos, two very dry sites, the cisterns were built as chambers.

In earlier Greek houses, and later in the houses of the less well-to-do, any interior courtyard led directly into the surrounding rooms. Beginning in the Classical period, however, shed roofs were built in some houses across the

courtyard face of rooms, especially those on the north side. Judging from the simple stone footings, the roofs of the early porticoes were supported with wooden beams. Full peristyles are not generally found in Greek domestic courts before the beginning of the fourth century BCE, but after that date, porticoes on all four sides of the unroofed court become more common (Figure 19.7). Whether the courtyard was surrounded by a full peristyle or not, in many houses the northern portico is the deepest. This depth can be seen as a demonstration of the orientation described by Xenophon and Pseudo-Aristotle. The greater breadth of the northern portico shielded the important rooms of the house from the heat of the summer sun. Houses with a deeper northern portico are too numerous to list, but this characteristic was first noted by the excavators at Olynthos (Figure 19.5), who dubbed that portico the *pastas*, the term taken from Vitruvius' description of Greek houses, but appearing elsewhere in ancient texts, especially Hellenistic papyri, about houses. Vitruvius (*De arch.* 6.7.1) calls the space in front of the main rooms of the house the *pastas* or the *prostas*. The latter term was borrowed by the excavators at Priene to identify the usually colonnaded porch of the main room, often on the north of the courtyard. The resulting arrangement in the houses at Priene, and at several sites in eastern Greece, is much like the axial layout of the porch and main room in the *megaron* of the Bronze Age. Much early scholarship on houses revolved around identifying houses as either *pastas* or *prostas* in type, but this approach is now recognized as having little value for understanding the use of domestic space. Either type of porch would provide shade for the entrance to the rooms on the north of the courtyard.

The supports of the domestic peristyle were elaborated architecturally from the late Classical into the Hellenistic period. The courtyards of fourth-century Olynthos are surrounded with square-sectioned piers, and the porticoes of the late fourth-century houses at Pella are made up of columns. The Doric order was favored for Hellenistic domestic peristyles, and when there was an upper story to the peristyle, the Ionic order was often used, repeating the gradation of the orders seen in many public buildings. In fact, public architecture is recognized as the source for the increasing architectural elaboration of Hellenistic houses (Walter-Karydi 1994). Domestic peristyles rarely had gutters, but the eaves of the roofs of some houses, such as those at Eretria in the Hellenistic period, were edged with decorative terracotta antefixes.

In the Classical period, the hallmark of the house was the flexible use of space. Rigid identification of rooms was not common, and we can today understand the use of space in any Classical house only through the distribution of artifacts used by the members of the household. These objects, including vessels for food storage and preparation, altars and other ritual equipment used for ritual observance, represent only the last use of a space before the house was destroyed and are definitive only if their deposition was not affected by other factors, including looting, erosion, and modern

intervention, such as plowing. Thus, we cannot label most rooms in classical houses, even though names for domestic rooms do appear in the written record. While the literary testimonia name rooms such as a woman's room (*gynaikōn* or *gynaikonitis*), or a weaving room (*histeion*), over time the label for any given domestic space could be changed along with the way the room was used. More firmly identifiable rooms are known in the Hellenistic period, when many houses had more rooms than their classical predecessors.

One room that is frequently identifiable in the classical house is the *andron*, literally the men's room, where the *kyrios*, master of the household, could entertain his male friends at dinner or communal drinking parties (*symposia*). Classical andrones often have against their walls a raised platform on which dining couches were placed so that the reclining drinkers and diners might face into the center of the room (Figure 19.5, room d). The andrones are usually square in plan so that the couches would fit comfortably in the space. The houses at Priene have small andrones, which could accommodate three couches, while the andrones in the Olynthian houses usually held seven couches (Cahill 2002: 180). Dining rooms for five or nine couches are also known. The *andron* is the room in which pebble mosaic floors first appear, and the designs of the pavements are oriented to the viewer entering the room (Figure 19.8). While the mosaic floors must be seen as interior decoration, and so are discussed in Chapter 20 (see also Westgate 2012), they had a functional aspect as well. After the dinner and drinking were concluded, the floor would be littered with dropped food and spilled wine, if not also with the contents of the stomachs of those who had consumed too much. A stone floor was easily sluiced out by the domestic slaves charged with cleaning up after the carousal. Not all classical houses contain a room easily identified as an *andron* (e.g., Figure 19.6), but the absence of a square room with a raised platform does not mean that male social dining and drinking did not occur in such a house (contra Nevett 2010: 43–62). A symposium could occur wherever men congregated, on couches or even on pallets on the ground.



Figure 19.8 House A vi.3, Olynthos.

Source: M.M. Miles.

In a number of houses, the andron is preceded by an anteroom (Figure 19.5, rooms f and d). Several houses at Olynthos have these suites of room, as does the House of the Greek Mosaic in Athens and the House of the Mosaics at Eretria. Some of the anterooms are well decorated with mosaic floors similar to those in the dining room itself, and they would have served as a further display of the wealth and taste of the homeowner. Many could have served as places for food preparation, but their main function may have been as a buffer for the household residents from the noise of the party and the visual intrusion of the male guests. A transom above the entrance of the dining room in the House of the Mosaics at Eretria would have allowed ventilation while also impeding visual access to the rest of the house.

Food preparation for either the symposium or everyday meals might take place in many different places in the house. Dedicated kitchens are virtually unknown in classical houses. Portable charcoal braziers used for cooking could be set up in the unroofed court in good weather or be placed under a roofed portico or in the doorway of a room in inclement weather. Opaion tiles, with a central opening, are found in a few houses and probably were used to evacuate the smoke from a fixed hearth (Figure 19.5, room k). In classical Greece, hearths were more often used as a gathering point for the family and a source of warmth and light, rather than as a locus for food preparation. The hearths at Olynthos contained no traces of bones or food debris. The

Olynthian houses often have a sizable flue off the hearth room (Figure 19.5, room h), connected by a pillar-framed opening in the wall, and it is here that traces of cooking are found.

Bathrooms are also rare in early Greek houses, and we must look to the all-purpose *lekane* (basin) to provide bathwater. No Greek houses had provision for running water, so the water would be poured into the tub and the used water scooped out after the bather had finished. In the fourth century BCE, rooms for bathing became more common, and, in houses where they occur (e.g., at Olynthos and Eretria), the bathrooms are located next to rooms with hearths on which water could be heated. The bathrooms are recognizable because they contain large terracotta tubs, fashioned with one step for the bather to sit on, a lower step for his feet, and a lowermost step on which the used bathwater could collect. Tubs of the same type appear in Greek public baths (see Chapter 23).

Latrines were also uncommon in Greek houses until the Hellenistic period. Before then, the cesspits in the court or street and various vessels, including the *amis*, specifically designed for urination, were used instead. When latrines were built, they were placed just inside the street door of the house, so that the wastes might be quickly evacuated into the street and its drain. The latrines in the Hellenistic houses on Delos and at Morgantina appear in this location and are identifiable by their narrow trenches, on top of which simple wooden seats might once have been placed.

Several Classical authors speak of the *gynaikōn* or *gynaikonitis*, a room that by its name has been seen as the place for women in the home. Using these passages and the Roman architect Vitruvius' description of the Greek house, scholars have long sought evidence in house plans of the secluded quarters in which well-bred Classical women kept out of men's gaze. The vast majority of Classical houses have no such identifiable spaces, and, as a result, some scholars have assumed that the upper story was used for female seclusion in Classical houses. Here, too, the evidence is wanting, as very few houses present any certain proof of an upper story. More recently, scholars agree that the seclusion of females was an ideal, rather than a practice so entrenched that we can see its evidence in house plans. Women could inhabit many domestic spaces over the course of a day, with greater freedom of movement in the daylight hours and perhaps lesser at night, when male guests might be invited in by the master of the household. M. Mactoux (1996) has argued that the specialized terms *gynaikōn* and *gynaikonitis* denote those rooms where female slaves were sequestered rather than separate living quarters for all females in the household.

Ancient authors often specifically labelled those rooms in a house where both women and slaves carried out their daily activities. Thus food and other household goods were stored in the *tameion* or *pitheon*, and weaving was done in the *histeion*. Yet, as with the *gynaikōn*, these rooms were not purpose-

built in Greek houses. Where pithoi and other storage vessels survive, we can recognize the family larder, usually on the ground floor, where the foodstuffs might be kept cool. Terracotta loomweights are the sole surviving element of the warp-weighted loom, and their findspots vary from house to house. The conclusion that must be reached from the diverse findspots of the household assemblage is that the rooms of the Greek houses were used in multiple ways by each family and the choices were motivated by custom as much as by the climate and season of the year.

Underground rooms were rare in Greek houses. An exception is the area of the Black Sea, where domestic cellars are common in Greek houses. On the Greek mainland they have been identified only at Eretria and on the Rachi at Isthmia. The basements are limited in scope and do not extend under the entire ground story of the house. Given the small size of the cellars and the access to them through the domestic areas of the house, they probably served as places for food storage, although few remains of large vessels confirm this assumption.

Upper stories are rare in the archaeological record, even though we may infer they existed from other evidence. At several Hellenistic sites (e.g., Soluntum on Sicily and Florina in Greece), houses were built on terraces cut into the slope of the hill. Excavators at Florina have restored the houses with belvederes, although little exists to support this reconstruction. At other Hellenistic sites (e.g., Iaitas, Delos, and Dystos), stone staircases or remains of the architectural orders of the gallery above the porticoes is the evidence of the upper story. Because most of these upper stories have collapsed, it is rarely possible to identify the use of their rooms, although sealings suggest that the upper story of the House of the Seals on Delos was used as an office for a thriving business. The general existence of upper stories in Classical houses is based largely on inference from literary testimonia, with two speeches of Lysias (1 and 15) cited most often. The mudbrick walls of the Classical houses were capable of supporting the weight of an upper floor, but since the mudbricks have long since decomposed, no trace of the elevations survives.

The separation of domestic space from either commercial or industrial activity was not rigidly enforced in Classical antiquity. Both literary and archaeological evidence attest that the Greeks were comfortable with combining their living and working spaces. Houses at both Athens and Olynthos amply demonstrate this fact. The House of Mikion and Menon in Athens (Figure 19.4) was used for several generations as both a residence and a sculptor's workshop. Abundant domestic pottery and painted wall plaster show that the building served as a home, but a thick layer of marble chips, dust, unfinished sculpture, and abandoned tools prove that at least some forms industrial production might not be separated from residential neighborhoods in antiquity (Tsakirgis 2015). The writers of several of the forensic speeches

surviving from the fifth and fourth centuries BCE refer to houses with workshops (*ergasteria*) appended, and documents exist for the sale or lease of houses with attached workshops.

The remains of country houses often reveal a similar combination of residence and work-related activities. While many Attic farmhouses, like those at Dema and Vari, are laid out very like the houses in the urban areas, agricultural tools and vessels used for food storage and manufacture reveal that the interior spaces were put to many uses. This practice parallels the flexibility of space in the urban houses and reveals another way in which the Greek house was not composed of rooms with strictly defined use. Additionally, farmhouses throughout the Greek world were equipped with stoutly constructed towers, which have long been thought of as storehouses for agricultural produce or equipment. Morris and Papadopoulos (2005) have suggested that the thick-walled towers with provision for securing the interior were places where slaves were kept, although the towers could have been used for other, agricultural purposes.

Developments in the Late Classical and Hellenistic Periods

Hellenistic houses are notable not only because their forms derive from Classical domestic architecture but also because they reflect an increase in scale and decoration over their predecessors. Some scholars have speculated that the greater size and elaboration of late Classical and Hellenistic houses was due to a decline in the importance of the polis under the Macedonian kings and their Hellenistic successors (Walter-Karydi 1994). This suggestion may overly complicate the social process, since domestic luxury began to increase in the late fifth century BCE, as is shown both by the testimony of the Attic Stelai, which list the houses and domestic possessions of the wealthy Athenian men who were found guilty of profaning the Eleusinian Mysteries, and by literary accounts of growing personal wealth and expenditure. Regardless of the cause, the effect of the new individual prosperity is most marked on both the size and the interior decoration of houses.

Interior decoration is discussed in [Chapter 20](#), but let us consider here the effects of this increasing luxury on house plans, elevations, and architectural details. From the fourth century BCE, some houses were built with two unroofed courts, rather than the one often found in Classical houses. Late Classical examples of this type can be seen at Eretria and at Athens, where two fifth-century houses (Houses C and D) ([Figure 19.4](#)), originally with one court each, were combined into a single house with two courts in the succeeding century. The courtyards of houses built from the outset with two

unroofed centers, such as the House of the Mosaics at Eretria, the house at Maronea, or the house at Erythrai, demonstrate a very distinct difference. In all three of the houses noted here, one courtyard is noticeably larger and equipped with more architecturally elaborate columns. In the other courtyard, fewer, if any, columns were built. The size and decoration of the rooms surrounding the two courts also differ, with those rooms around the larger court being themselves bigger and more elaborately decorated. Finds from the respective courtyards and rooms confirm what the architecture tells us, that the more impressively built space was for entertainment, presumably of guests, and that the other was the locus of household activities, such as food storage and preparation.

While it might be tempting to see in these houses the vindication of the Roman architect Vitruvius and his description of Greek houses, the homes are better interpreted as demonstrating the ever-increasing scale of domestic accommodations. It is to this period that many architecturally elaborate houses, such as Peristyle House I at Iaitas, belong. The stone columns and capitals there, the molded and painted terracotta antefixes at Eretria, the mosaics at Pella, and the wall paintings of the Morgantina houses are all features of the domestic setting that must have derived inspiration from the palaces of the Hellenistic kings. The luxury gardens of some Hellenistic houses are further confirmation of this source.

FURTHER READING

Basic information on the plans and details of Greek houses and their domestic assemblages can be found in the publications of excavations, including Athens (Young 1951), Eretria (Ducrey, Metzger, and Reber 1993; Reber 1998), Rachi (Anderson-Stojanović 1996), Halieis (Ault 2005), and Morgantina (Tsakirgis forthcoming). Other volumes analyze the evidence recovered in earlier excavations, e.g., Hoepfner in 1999 (for numerous sites) and Trümper in 1998 (Delos). The bibliography on Greek houses has grown greatly since the mid-1990s. Several scholars examine the social and economic structure of Greek domestic life, either from a general perspective (e.g., Nevett 1999; 2010) or with a focus on particular sites, e.g., Cahill 2002 on Olynthos. All of these books build upon the ideas of Jameson in his two articles of 1990. Hoepfner and Schwandner 1994 also use house forms to interpret social structure in the Greek polis at large, but their conclusions have met with some criticisms. Several compilations of articles explore detailed aspects of houses and housing: Ault and Nevett 2005; Westgate, Fisher, and Whitley 2007; Ladstätter and Scheibelreiter 2010. The various articles contain a wealth of bibliography.

REFERENCES

- Anderson-Stojanović, V. 1996. "The University of Chicago Excavations in the Rachi Settlement at Isthmia, 1989." *Hesperia*, 65: 57–98.
- Ault, B.A. 2005. *The Excavations at Halieis. Vol. 2: The Houses: The Organization and Use of Domestic Space*. Bloomington.
- Ault, B.A. and L.C. Nevett, eds. 2005. *Ancient Greek Houses and Households: Chronological, Regional, and Social Diversity*. Philadelphia.
- Breglia Pulci Doria, L., ed. 1996. *L'incidenza dell'antico: Studi in memoria di Ettore Lepore*. Naples.
- Cahill, N.D. 2002. *Household and City Organization at Olynthus*. New Haven.
- Duchêne, H. 1992. *La Stèle du port: Fouilles du port I. Recherches sur une nouvelle inscription thasienne*. Études Thasiennes 14. Paris.
- Ducrey, P., I. Metzger, and K. Reber. 1993. *Eretria: Fouilles et Recherches. Vol. 8: Le Quartier de la Maison aux Mosaïques*. Lausanne.
- Hoepfner, W., ed. 1999. *Geschichte des Wohnens, Band 1. 5000 v. Chr. -500 n.Chr. Vorgeschichte, Frühgeschichte, Antike*. Stuttgart.
- Hoepfner, W. and E. Schwandner. 1994. *Haus und Stadt im klassischen Griechenland*. 2nd ed. Wohnen in der klassischen Polis 1. Munich.
- Jameson, M. 1990a. "Private Space and the Greek City." In Murray and Price, eds., 171–198.
- Jameson, M. 1990b. "Domestic Space in the Greek City State." In Kent, ed., 92–113.
- Kent, S., ed. 1990. *Domestic Architecture and the Use of Space*. Cambridge.
- Ladstätter, S. and V. Scheibelreiter, eds. 2010. *Urban Living in the Eastern Mediterranean, Fourth Century B.C. to First Century A.D.* Vienna.
- Mactoux, M.-M. 1996. "Effractions dans la gynécées." In Breglia Pulci Doria, ed., vol. 2: 113–139.
- Miles, M.M., ed. 2015. *Autopsy in Athens: Recent Archaeological Research on Athens and Attica*. Oxford.

Morris, S.P. and J. Papadopoulos. 2005. "Greek Towers and Slaves: An Archaeology of Exploitation." *AJA*, 109: 155–225.

Murray, O. and S. Price, eds. 1990. *The Greek City from Homer to Alexander*. Oxford.

Nevett, L.C. 1999. *House and Society in the Ancient Greek World*. Cambridge.

Nevett, L.C. 2010. *Domestic Space in Classical Antiquity*. Cambridge.

Nielsen, I., ed. 2001a. *The Royal Palace Institution in the First Millennium B.C. Regional Development and Cultural Interchange between East and West*. Athens.

Nielsen, I. 2001b. "The Gardens of the Hellenistic Palaces." In Nielsen, ed., 165–187.

Reber, K. 1998. *Eretria: Ausgrabungen und Forschungen X. Die klassischen und hellenistischen Wohnhäuser im Westquartier*. Lausanne.

Smith, T.J. and D. Plantzos, eds. 2012. *A Companion to Greek Art*. Malden, MA.

Trümper, M. 1998. *Wohnen in Delos: Eine baugeschichtliche Untersuchung zum Wandel der Wohnkultur in hellenistischer Zeit*. Rahden/Westfallen.

Tsakirgis, B. 2005. "Living and Working around the Athenian Agora: A Preliminary Case Study of Three Houses." In Ault and Nevett, eds., 67–83.

Tsakirgis, B. 2010. "Illuminating the Life Within: Windows on Behavioral Patterns in Greek Houses." In Ladstätter and Scheibelreiter, eds., 569–582.

Tsakirgis, B. 2015. "Tools From the House of Mikion and Menon." In Miles, ed., 9–17.

Tsakirgis, B. Forthcoming. *Morgantina Studies 7: The Domestic Architecture of Morgantina in the Hellenistic and Roman Periods*. Princeton.

Walter-Karydi, E. 1994. Die Nobilitierung des Wohnhauses: Lebensform und Architektur im spätklassischen Griechenland. *Xenia: Konstanzer althistorische Vorträge und Forschungen* 35. Konstanz.

Westgate, R. 2012. "Mosaics." In Smith and Plantzos, eds., 186–199.

Westgate, R., N. Fisher, and J. Whitley, eds. 2007. *Building Communities: House, Settlement and Society in the Aegean and Beyond*. BSA Studies 15. London.

Young, R.S. 1951. "An Industrial District of Ancient Athens." *Hesperia*, 20: 135–288.

CHAPTER 20

Hellenistic Royal Palaces

Stella G. Miller

Basileia

Macedonia, as birthplace of Hellenistic monarchies, stands at the head of any study of Hellenistic palaces. The modern term “palace” (derived from the Italian *palazzo*) demands definition, however, since its current usage tends to be highly elastic. A broad view accepts three major categories of ancient palaces: royal palaces, governors’ palaces, and private palaces/palatial houses that are found over the vast territories conquered by Alexander and subsequently ruled by the Successors (Nielsen 1994: 11). It may also cover a host of palaces reused from earlier times as well as hybrid structures built in distant places to suit local traditions and aspirations. And chronologically, finally, Hellenistic palaces may extend from the age of Philip II (reigned 360/59–336 BCE) down into the Roman Republican period, with the Battle of Actium marking a cut-off date in 31 BCE. Such a range, fascinating and important as it is, exceeds the parameters of the present chapter, which takes the narrow course by focusing on the small corpus of royal Hellenistic palaces now known through excavations, with a few additional glimpses gleaned from written sources. It thus adopts the now generally accepted definition of *basileia* (Latin *regia*) as a royal compound that, in addition to residential installations, included an array of public administrative and religious precincts (Hoepfner 1996: 1–43).

Macedonian kings built multiple palaces that answered to particular, changing needs over the years in accord with territorial expansion and dynastic ambitions. Of the three extant palaces, Vergina and Pella reportedly have mid-fourth-century roots in the age of Philip, while Demetrias was begun in the early third century as a creation of Demetrius Poliorcetes (reigned 294–287 BCE). Additionally, there is literary evidence to suggest the existence of a fourth palace at Thessaloniki in the age of Perseus (reigned 179–168 BCE), of which actual traces may have been found (Diod. Sic. 32.15.2; Livy 44.10).

The royalty of the Successor kingdoms also ruled from palaces, though the complex of Pergamon alone survives. Thus, for instance, we have nothing, apart from brief literary references, to document the once magnificent palace of the Seleucids at Antioch (Nielsen 1994: 112–115). For the Ptolemies, too, we have no palaces, though here we gain some sense of the royal compound at Alexandria with help of more extensive written sources. It is for this reason

that the Alexandrian palace finds a place in this overview.

Current archaeological investigation of Hellenistic royal palaces is adding new dimensions to our understanding of the institution of the monarchies. Although there is no typical plan, the Hellenistic palace complex tended toward multifunctional activities that led to expansive layouts, even mini-cities. While centered on diplomatic activities for reception and the all-important banqueting, they included administrative, political, cultural, and military facilities, all served by a fully organized infrastructure that kept the operation running.

Notably, royalty on the move used mobile palaces in the form of tents and even barges, just as they freely requisitioned foreign resources as needed. For example, witness Alexander's use of the great Achaemenid palaces during the eastern campaign, or, quite outrageously, Demetrius Poliorcetes' commandeering of the Parthenon while in Athens (Plut. *Vit. Dem.* 23.3). Thus, mobile palaces, too, merit attention. In the end, self-presentation was paramount wherever royalty set foot in whatever milieu. Palaces, stationary and mobile, are presented in this chapter in chronological order according to their founding dates, although, to be sure, all underwent renovation, sometimes major, as time went on.

The Palace at Vergina

Vergina, ancient Aigai, founded in mythical times as chief city of the Macedonians, continued to serve as ceremonial capital and royal burial grounds even after transfer of the official administrative capital to Pella in about 400 BCE. Vergina's extant palace was, according to latest research, constructed during the lifetime of Philip II, with alterations and additions occurring over the next two centuries. It was ultimately destroyed by fire sometime after the arrival of the Romans, whose victory at Pydna in 168 BCE under Aemilius Paullus was decisive not only for Macedonia but also for all of Greece. Quarrying of the palace was already underway when it was struck by a serious earthquake in the first century CE. An earlier palace, from the time of Alexander I the Philhellene (reigned circa 498–454 BCE), known so far only from literary sources, lies elsewhere in the area. Whether or not it survived and possibly even functioned in some capacity during the Hellenistic period cannot be ascertained at present.

The extant palace was discovered and partially investigated in the mid-nineteenth century by French travelers who sent significant fragments to the Louvre (Descamps-Lequime 2011: 296–311). Results of excavations are currently approaching final publication after years of intermittent interventions by different Greek teams and many attempted restorations

(Kottaridi 2011: 297–333). Occupying an area of some 12 500 m², roughly three times the size of the Parthenon, the palace sits on a leveled plateau of the sloping acropolis, within towered city walls that are currently dated over several decades in the fourth and early third centuries. From this perch it commands a far-ranging view across the lower city to the plain and mountains beyond. Just below is the unfinished theater, believed to be the spot where Philip II was murdered (Diod. Sic. 16.91–94). How the palace relates to the urban fabric encompassing not only the theater but also royal dedications and public monuments beyond awaits further archaeological investigation.

The palace is laid out around a large peristyle courtyard with the addition of a smaller, off-center peristyle at the rear (Figure 20.1). Overlooking the city along the north side is a great retaining wall built to support an open veranda that, contrary to most earlier reconstructions, is now thought to have had neither columns nor parapet. The entryway midway along the eastern façade (labeled “Pr. 1” in Figure 20.1) is currently restored with a two-storied propylon. Its lower order, distyle in antis, is composed of Ionic double-sided pillar-columns, flanked by antae crowned with sofa capitals. Its blind upper story is reconstructed with Ionic half columns, pentastyle in antis, interspersed with false doors (sometimes called “windows” in scholarship), in a manner reminiscent of the two-storied façade of one of the grandest Macedonian tombs, the late fourth-century “Tomb of the Judgment” at Lefkadia (Miller 2014: pl. 5.5). Flanking the propylon on either side are foundations for long, two-storied porticoes with benches restored on foundations found inside (U and X). These porticoes once featured Doric columns below an upper Ionic order of double-sided pillar-columns connected by parapets. Working windows with wooden sills are associated with the façade.

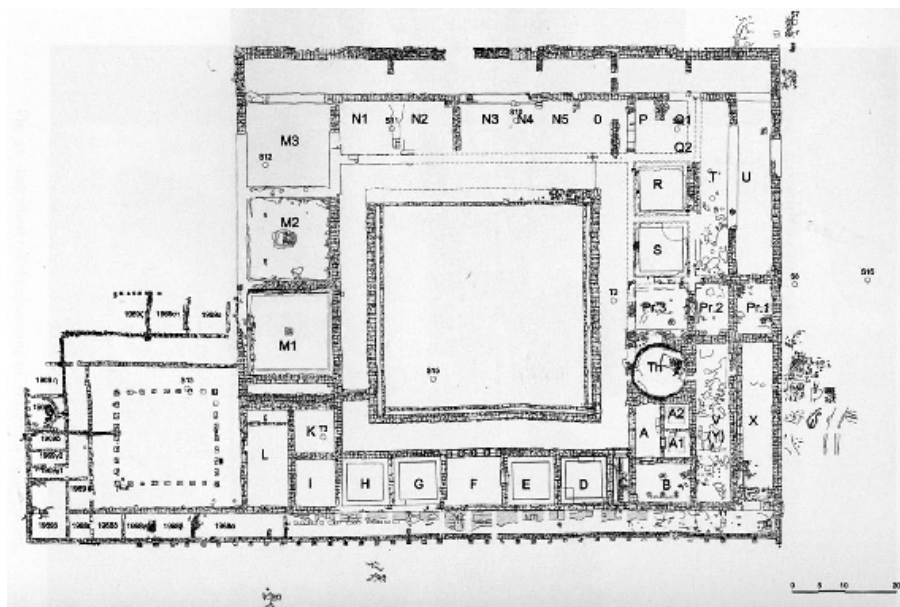


Figure 20.1 Palace at Vergina, plan.

Source: adapted from Kottaridi 2011, fig. 32a.

The entrance proper, restored with Ionic double-sided pillar-columns flanking heavy, bronze-clad wooden doors (Pr. 2, Figure 20.1), leads through a large antechamber/waiting room having space for 40 seated individuals (Pr. 3, Figure 20.1) to the huge central courtyard. Measuring 41.40 m² and with a peristyle of 16 Doric columns on a side, the courtyard could accommodate an estimated 3000 people seated. Presumably this great space served as an official gathering place; it was, in any case, not planted with gardens, as has sometimes been proposed. In general, much palace activity focused on banqueting, as is indicated by the numerous *andrones* (dining rooms), many embedded in tripartite configurations where they flank a central room accessible from the peristyle. Collectively, the palace andrones have an estimated capacity of 224 dining couches. The largest tripartite grouping (M1–3) has astonishingly long, unsupported roof spans of more than 18 m. Its central chamber (M2), a possible throne room capable of accommodating 500 seated individuals, is paved in marble *opus sectile* laid in red plaster with black pebble mosaic borders. It is set off from the peristyle by five double-sided pillar-columns. The andrones in the smaller tripartite grouping on the southern side (E–G) have ornate pebble mosaic floors: one (E) with florals and vegeform females in the corners, the other (G) centered on the abduction of Europa and surrounded by dolphins and sea monsters. A glimpse of elite banqueters, complete with entertainers and symposium furniture, appears in a painted frieze on the façade of a contemporary tomb at Aghios Athanasios near Thessaloniki (Descamps-Lequime 2011: 388, Fig. 76; Miller 2014: pl. 5.8–9).

Other generous spaces in the palace presumably functioned in official capacities, although whether for administrative or perhaps legal purposes cannot be said. A second story over part of the palace may have been residential. Religious activities undoubtedly occurred in a tholos off the courtyard on the east (Th), a room that is epigraphically connected with rituals of Herakles Patroos, the mythical royal progenitor of the Macedonian royal house. Dating in part to a late renovation, it is provisionally restored with interior Corinthian half columns to support a series of fragmentary reliefs now in the Louvre (Descamps-Lequime 2011: 306, figs. 182–184). Necessary infrastructure for the palace complex was housed in the smaller, off-center unit to the rear that consists of a wooden peristyle and rooms appropriate for storage as well as a kitchen with hearth.

Much of the palace was constructed of limestone, either from the quarries at nearby Mt. Vermion or, for carved elements, of travertine. Visible surfaces were coated with marble stucco. Marble itself was reserved primarily for thresholds. Walls were constructed in the usual fashion of classical antiquity with well-worked stone orthostates supporting a mudbrick superstructure.

Blocks were treated with anathyrosis and connected with metal dowels and clamps, both pi-shaped and dovetailed. Interior stuccoed wall surfaces were painted red, ochre, grey-blue, black, and white in the “Masonry Style,” complete with faux stone veining to mimic ashlar coursing. Surviving drainage pipes and channels are part of an extensive and sophisticated system of water management, while post holes around the exterior perimeter indicate the positioning of cranes that lifted blocks into place during construction. The roof had a wooden substructure supporting Corinthian roof tiles, many of which were stamped, and ended in terracotta relief antefixes together with painted cornices.

Mathematical principles said to underlie palace construction await full discussion with final publication. In the meantime, we recognize a combination of traditional and innovative features embodied in the Vergina palace that also inform its counterpart at Pella, as well as the architecturally articulated façades of Macedonian tombs (Miller 1993: 11 and *passim*). Most striking, perhaps, is the theatrical treatment of two-storied façades that employ architectural orders for decorative effect. It was a tradition embraced during the succeeding centuries for assorted buildings ranging from stoas to fortification tower gates. The introduction of double-sided pillar-columns that, whether actually the first of the kind or not, enjoyed considerable popularity as time went on, was also innovative. And, by the same token, tripartite suites had a long after-life. The provocative suggestion that the palace was conceived by Pytheos, an architect best known for his work on the Mausoleum at Halikarnassos, is a working hypothesis that awaits further consideration (Kottaridi 2011: 332).

The Palace at Pella

The capital of Macedonia moved to Pella around 400 BCE, as noted, a step likely engineered by King Archelaus (reigned 413–399 BCE) to take advantage of a favorable location near the sea. Archelaus is said to have built a palace for which he commissioned the painter Zeuxis of Heraklea as decorator (Ael. *VH* 14.17). Whether that palace lies beneath the Hellenistic structure currently being excavated or elsewhere in the city remains under collegial discussion (Akamatis 2011: 401; Chrysostomou 2011: 64).

The extant Hellenistic palace, first investigated in the 1960s, has remained under excavation to this day, with a succession of Greek directors (Chrysostomou 2011: 58–65). It is an archaeologically challenging site that was repeatedly renovated and restored in Greek antiquity, then heavily quarried for building material starting in Roman times. The palace, covering a large expanse currently estimated at more than 70 000 m², was built on a hill (the so-called Acropolis) overlooking the plain toward what was then Lake

Loudias and mountains in the distance. According to current understanding, building was begun in the fourth century, perhaps as early as the reign of Philip. Throughout subsequent updating and expansion during the next two centuries, associated primarily with the reigns of Cassander, Antigonos Gonatas, and Philip V, it always remained separate and apart from the city, while functioning as the royal residence and administrative center of the kingdom until the coming of the Romans in 168 BCE. The palace evidently fell into disuse when the Roman colony of Pella, founded a century later, was shifted slightly westward.

The palace complex, constructed on artificially terraced terrain facing south, came to be protected at the rear by a moat and towered fortifications that date to the age of Cassander (Figure 20.2). Off the northeast rear corner is a monumental postern gate-tower, called a *karabos* by the Macedonians (Hsch., s.v. *karabos*), that gave access to the ramparts. A road from the agora formed the official approach in that direction, but there was also a service road circling behind. The complex, as currently understood, is divided into numerous large units of which four, laid out in a great square, form the core. Each unit, interconnected by corridors and stairs, is focused on a central courtyard with an Ionic or Doric portico. The two front units (KTHPIO I and II), together encompassing 13 000 m², share a common façade of Doric porticoes, 160 m long, that are interrupted by an off-center two-storied propylon. The propylon is currently restored with four Doric columns in antis at ground level and Ionic double-sided pillar-columns in antis separated by false doors above.

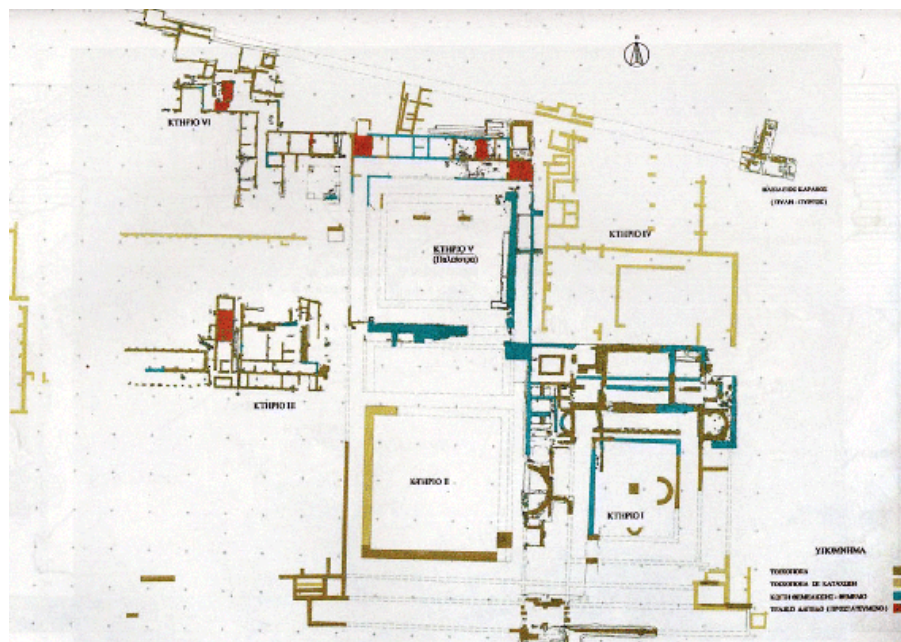


Figure 20.2 Palace at Pella, plan.

The front units are considered public spaces that served official purposes in hosting symposia, assemblies, and royal audiences with visiting dignitaries. Unit I has a Doric peristyle having columns arranged 11×13 that preserves a full complement of its architectural order. At the center is an altar. Toward the north is a base of monumental scale, 30.50×1.30 m, reconstructed to support bronze tripods and family portraits that, like a well-known Antigonid dynastic dedication on Delos, patently legitimized and glorified the power of the rulers in a fashion ultimately adopted, and for the same reason, by Roman emperors. Around the peristyle is a complicated web of rooms, some from later renovations, such as two opposing apsidal exedrae toward the northern end that presumably served religious purposes. The larger of these preserves two Ionic columns in antis at the entrance and two pilasters with sofa capitals inside. Along the northern side of the peristyle is a suite consisting of a vestibule and antechambers, each with Ionic double-sided pillar columns, that opened to three andrones, one for 26 couches and two more for 15 each (Hoepfner 1996: 29–30, figs. 24–25). A series of relatively small Ionic engaged capitals and bases has been tentatively reconstructed along the walls of the central *andron* (Hoepfner 1996: 33–34, figs. 28–29). Behind is a poorly preserved unit thought to be the royal residence (IV), which also housed a mint, so identified by discovery of bronze bars and coin blanks. It may also have contained the royal library from which Aemilius Paulus took books for his sons, though this remains purely conjectural (Plut. *Vit. Aem.* 28.6). Just outside is a hypostyle bath.

Next to the residence is the fourth unit (V), indisputably a palaestra that rivals the facility at Olympia in size. Reference to the ideal palaestra described by Vitruvius (*De arch.* 5.11) is illuminating. He writes of a large open-air courtyard surrounded by roofed colonnades, single on three sides, double on the north. The courtyard at Pella, measuring 50×38 m, has a wooden peristyle, as well as the recommended second portico along the north. Vitruvius proceeds to describe a series of exedrae off the northern peristyle that show some similarities with the eight rooms of the Macedonian floor plan. Thus, the Vitruvian *epehebeion* designed for youths in training for future citizenship can be seen in the center room here (52 m^2) that, as in the ideal version, is flanked by rooms appropriate for the punching bag, another for dusting, and a third for oiling. Other rooms, preserved in several building phases, are for undressing, bathing, and so on. Exact correspondence is not to be expected (well-preserved palaestrai at Olympia and Priene also differ), as spaces will naturally have evolved according to local needs and preferences. Pella, for instance, adds a rectangular swimming pool complete with tank reservoir. Here too, off to the west, is a *xystos*, or long covered corridor (115×5.5 m) that permitted exercise in winter. Bases in the courtyard were presumably for honorary or votive statues. Noteworthy are the architectural

details of the ephebeion that is set off by columns and pilasters with Corinthian capitals.

Two more units extend the palace core: one adjacent to the palaestra with Doric peristyle and fitted with a smaller bath that is thought to have housed aristocratic youths in training (VI). Fragmentary wall plaster painted white, yellow, and red was found nearby. Another area (III) revealed, at lower levels, a large unfinished stoa (of which a partially worked Doric column drum remains in place) that was built over in the early third century, partly in wood. These later structures are identified as workshops, storage rooms, living quarters for service personnel, and a stable. Additional workshop areas under investigation have produced lead weights, amphoras, pithoi, and the like.

Construction relied heavily on limestone for foundations, mudbrick for upper walls, and wood for doors, roof timbers, and the palaestra's peristyle. Marble was employed selectively for architectural members, including roofing, together with Laconian terracotta roof tiles. Surviving architectural members tentatively help to establish various building phases. From its initial mid-fourth-century phase, for example, are antefixes, simas, lion-head spouts as well as a Doric capital from the façade. Later phases are documented in part by an early Hellenistic marble Ionic capital from the peristyle of the residential wing (IV) and a sofa capital from an exedra in Unit I dated before the mid-third century. Finally, an abundance of stamped roof tiles are of great interest, as they span more than two centuries, with some indicating royal workshops and others the names of private entrepreneurs (Chrysostomou 2011: 58–63).

Apart from the “Masonry Style” wall covering noted earlier, little remains of interior decoration, but we may assume that paintings covered the walls in the tradition started by Zeuxis for the earlier palace. Indeed Zeuxis' original paintings might have been moved to serve together with the pinax he gave the king as the core of a royal art collection (Plin. *HN* 35.63). An addition to it was the bizarre painting by Aristides the Younger of a dying mother suckling her child that was reportedly brought to Pella by Alexander the Great (Plin. *HN* 35.98–99). Some reflection of palace paintings may perhaps be seen among tomb paintings discovered at Pella, Vergina, and elsewhere in Macedonia (Miller 2014: *passim*). Indeed, the palace might even have possessed the originals from which they derive. To complement what must have decorated walls, we can imagine palace floors set with pictorial mosaics in the manner of several palatial villas in the city below (Dunbabin 1999: 14–15, figs. 12–14; Miller 2014: Fig. 5.26, CD/Web 5.11). Alternatively, the residents might have used Persian-style carpets with figural motifs like those in the Ptolemaic tent pavillion at Alexandria (Ath. 197.B).

The ever-evolving palace at Pella may stand as close to a model of functioning palaces in the Hellenistic world as we can hope to come. It also had a bearing on Roman lifestyle. The customary looting that formed a coda

to Macedonia's military defeat in 168 BCE, though obviously tragic for the losers, was the impetus for wholesale export of treasures, works of art, even architects and artists (Plut. *Vit. Aem.* 29–34). The event helped cement the cultural bridge that linked the admiring populace in Italy back to Greece. With a taste for Hellenic luxury well established, affluent Romans could choose a lavish lifestyle exemplified by the splendid villas around Mt. Vesuvius. An obvious showpiece is the “palatial” House of the Faun at Pompeii (Nielsen 1994: 165–168; Hoffman 1996).

Alexander's Mobile Palace: the “Tent of One Hundred Couches”

Tents are obviously portable utilitarian affairs that have trailed along with peoples on the road, and not only nomads, since time immemorial. But there were also seriously upscale tents, such as the royal Persian pavilions the Greeks encountered during the invasion of their country early in the fifth century BCE. Xerxes' fabulous campaign tent, captured in the aftermath of the Battle of Plataea (479 BCE), adorned with gold and silver, furnished with embroidered draperies, and filled with objects of staggering value, had enormous impact at the time (Hdt. 9.9.80–82). The playwright Euripides helped perpetuate its afterlife (*Ion* 1132–1165). And better yet, lingering memories would be grounded in reality once Alexander captured the luxuriously furnished tent left behind by a fleeing Darius (III) at Issos in 333 BCE (Plut. *Vit. Alex.* 20.11).

Even before leaving home, Alexander held court in an enormous tent-pavilion at Dion to mark his immanent departure on the Eastern expedition in 335/4 BCE (Diod. Sic. 17.16.3–4). Unsurprisingly, the tent then accompanied the king eastward, where it became part of a tent city that sprang up as needed for entertaining, for holding audiences, for sleeping, and the like. Indeed, we hear of Alexander's mobile office in Central Asia where he conducted business from a gold throne (Ath. 12.537.D, quoting Ehippos of Olynthos). The king's growing addiction to luxury, measured in terms of gold and precious jewels alone, was fed by a steady supply of costly loot. How else to imagine the marriage tent, possibly even Darius' own, at Susa (Ath. 12.538.B–E, quoting Chares of Mytilene) whose bejeweled gold columns, gold-shot figured curtains, and carpets interwoven with gold staged the extravagant mass wedding? The Ptolemies would carry on the lavish tent tradition in Alexandria (as will be seen) and even the Romans got in on the act by dedicating, though for somewhat different reasons, four of what were purportedly Alexander's tent-poles in Rome: two at the Temple of Mars Ultor in the Forum of Augustus, and two in front of the Regia in the Forum Romanum (Plin. *HN* 34.18.48).

The Palace at Alexandria

Alexander founded the city named for him on the Nile Delta during his invasion of Egypt in 332 BCE. At the time, however, he and his entourage stayed in the old capital at Memphis, surely at the traditional palace, the so-called Palace of Apries, whose poorly preserved remains have been investigated, though with disappointing results (Thompson 2012: 11–12). Since Memphis, rather like Vergina, retained ceremonial significance even after Alexandria became the capital under Ptolemy I (reigned 306–282 BCE), the Ptolemies likely undertook renovation even as they enhanced the Memphite landscape with palaces of their own. According to tradition, Alexandria was laid out by the master architect Deinocrates (Vitr. *De arch.* 2.praef.1). It was then left to the Ptolemaic Successor generations to build the city into the Mediterranean showpiece that dominated the eastern Mediterranean economically, politically, and culturally for several centuries thereafter.

The vast quarter of ancient Alexandria's palace complex, spread over ancient Cape Lochias (the Silsilah promontory), is for the most part inaccessible today under the modern cosmopolitan city of the same name. Intermittent excavations in the city have occurred since the late nineteenth century under direction of Egyptian and international teams (e.g., German, British, Italian, Polish, and French). Important investigations took place in the 1990s during construction of the Bibliotheca Alexandrina that overlies part of the palace precinct and also with underwater exploration of the harbor (Empereur 1998; Goddio and Clauss 2006). A few remains uncovered over time in the presumed area of the palace provide tantalizing glimpses into the Ptolemaic city (McKenzie 2007: 68–71). Thus, excavations of long ago revealed substantial Greek-style architectural members together with foundations of a late third-century monumental building with Doric and Ionic colonnades. Other remains include a Doric stoa, parts of some structure with a Corinthian-style interior, and foundation plaques of a temple dedicated to Isis, Serapis, Ptolemy IV (circa 244–205 BCE), and Arsinoe (221–205 BCE). Best known, however, are the more recently discovered Hellenic-style mosaic floors from urban residences, ranging in date from the fourth to second centuries that have been uncovered here and there (Dunbabin 1999: 23–26, figs. 22–24; McKenzie 2007: 67–71, figs. 96–100).

Otherwise, what we know about the palaces derives essentially from late written sources (cf., Fraser 1972: I.14–17). To begin with, Alexander reportedly ordered a “palace marvelous for its size and the massiveness of its works” (Diod. Sic. 17.52.4). And the quarter is described by Strabo, who visited in the 20s BCE, as a city within a city that occupied between a quarter

and a third of the city (Strab. 17.1.8). In the end, it contained a number of palaces built by successive generations, temples, banqueting halls, the Mouseion and Library, residences, parks with pavilions and gardens, and the Sema, or royal burial grounds with the tomb of Alexander that firmly established the all-important dynastic legitimacy of the Macedonian rulers. The poet Lucan (*Phar.* 10.111–121), a visitor in 48 BCE in the age of Cleopatra VII (69–30 BCE), provides some specific details. He marveled at the temple-like appearance of the palace whose ceiling beams were clad in gold, walls covered in marble, floors in alabaster, and doors of ebony with touches of ivory, tortoise shell, and even emeralds. Whether all the materials were genuine cannot be said, and Lucan may have been at least partly taken in by appearances achieved through faux finishes typical of the Hellenistic “Masonry Style.”

An extension of the already vast palace existed in the famous banqueting tent of Ptolemy II (285–246 BCE) (Ath. 5.196a–197c, quoting Callixenus of Rhodes; cf., Nielsen 1994: 133–136; Pfrommer 1999: 69–75; Calandra 2011; Emme 2013: 31–53). Callixenus’ description invites comparison to Alexander’s expedition tents (discussed in the previous section). Here the main hall, approximately 26 m high, had a canopied roof with gold eagles on top, palm-tree columns, dark red curtains, and animal skins, while a colonnade with vaulted roof ran around three sides outside. Couches were set here too for 100 guests in a fabulous setting of paintings and sculptures by famous artists, wondrous carpets, gold and silver dinner plate, and other treasures.

Sources of inspiration for the elusive Alexandrian palaces came from several directions. We can imagine a mixture of elements from Persia, Pharaonic Egypt, and the homeland in Macedonia, a theory supported above all by the hybrid character of funerary architecture that dots the modern city’s landscape. Architectural features of Alexandrian buildings, often described as “Baroque,” are, in turn, widely reflected in Roman wall painting of the Second Style (McKenzie 2007: 96–113).

The Ptolemaic River Boat Palace

A different sort of palace was the *Thalamegos*, or Nile River Boat, of Ptolemy IV (reigned 222/1–205 BCE), a 300-ft long catamaran (Ath. 5.204d–206c, quoting Callixenus; cf., Nielsen 1994: 136–138; Pfrommer 1999: 93–124; Thompson 2013, 189–192). Though allegedly designed for river use, and said to have traveled under a linen sail, scholars have questioned its navigability; perhaps it remained moored like an elegant offshore casino. In any case, emphasis on banqueting is as apparent here as it is in the land palaces. Thus, we hear of a spacious entry with propylon, a roofed area resembling a stage building, a four-doored gateway with windows, and antechambers that opened

into a Corinthian peristyle made of wood touched with gold and ivory that enclosed 20 klinai, or couches. Also on this floor were bedrooms, another andron, and a separate women's domain. Callixenus marveled at the interior decoration of its 29 rooms spread over two floors. Upstairs, accessible by a stairway, were several more bedrooms and andrones. One of the andrones was decorated in Egyptian style with lotus-type capitals on columns tapering downward in a nod to Pharaonic culture. Another, draped tent-like, takes a cue from Macedonian campaign tents. Clearly a highlight are the sanctuaries, a tholos for a statue of Aphrodite and a peristyle as a fitting honor for Dionysus, having space for 13 klinai and a bejeweled faux cave alongside that housed royal portrait statues.

The Palace at Demetrias

Demetrius Poliorcetes founded the Magnesian city of Demetrias in the gulf of Volos around 293/2 BCE as a synoecism of earlier communities. It was a strategically located base (later called one of the “three fetters of Greece” by Polybius (18.11.5–6)), from which the ambitious king hoped to rule an Aegean empire. That did not happen, but the city flourished under his Antigonid successors as Macedonia's second most important city after Pella, complete with a royal residence of its own.

Excavation of the palace complex, begun in the early twentieth century, has continued intermittently since the 1960s with a succession of teams under Greek and/or German direction. Even so, and despite occasional targeted probes, substantial parts remain unexplored in a tangle of foundations that render interpretations frustratingly tentative. Additionally, as at Pella, the palace underwent several building phases while here too, suffering from erosion and the results of later quarrying for materials. The main extant part of the palace is identified in reports as the “Anaktoron” (or alternatively as the “Tetrapyrگون” for the four towers appearing at each outer corner), a complex dated to around 200 BCE during the reign of Philip V (221–179 BCE) (Marzollf 1996: 156–159). Entrance locations are unclear, but a buttressed wall linked it to the agora as part of the city fortification system built against Roman threats. The palace was probably abandoned after 168 and deserted after 120 BCE.

The complex sprawls across several terraces high above the agora, aligned fairly closely with the city's orthogonal grid system (Figure 20.3). The “Anaktoron” measures 59.80 × 61.30 m, but inclusion of the four towers at its corners gives it a maximum dimension of approximately 94 m on a side. The central two-storied peristyle, measuring 27.10 m on a side, is tentatively restored with tall Ionic double-sided pillar-columns along the north, the rest with Doric above and below. For the Doric order, the architect employed

distinctive cordiform piers at re-entrant angles (heart-shaped half-columns applied to adjacent faces of a square pillar), a solution already widespread in Ionia (Marzolf 1996: 159–160). Dispersed along all four sides of the courtyard are some 36 rooms of different sizes and configurations. Among them tripartite configurations appear on each side where, as at Vergina, the side rooms are accessible only through the central space. Many of the rooms have appropriate shape and dimensions for accommodating klinai. The location of residential areas remains unclear. Otherwise, a number of clay sealings indicate palace activities under royal and/or public authority and remains of a base for a naval monument may have supported a ship's prow bearing a statue of Demetrius Poliorcetes as both naval hero and *oikistes*, or city founder, that probably stood in the courtyard (Batziou-Efstathiou 2002: 28, fig. 31). Marking the end of the palatial phase is activity associated with bronze workers who took over the peristyle to cast, most notably, a more than life-sized equestrian statue in the mid-second century BCE (G. Zimmer 2003: 31–38). The suggested attribution of the statue to Aemilius Paullus, who conquered Macedonia and with it, all of Greece, makes historical sense.

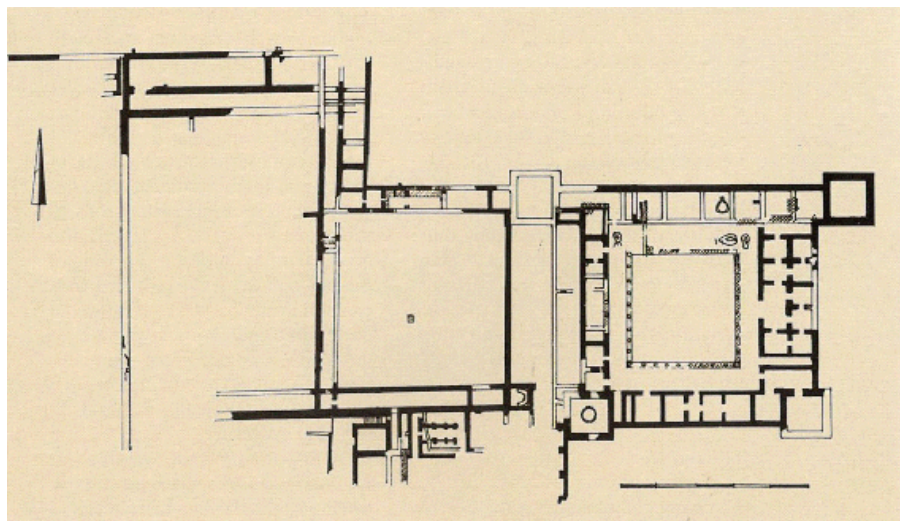


Figure 20.3 Palace at Demetrias, plan.

Source: adapted from Batziou-Efstathiou 2002, fig. 19.

Building materials of the “Anaktoron” include reused elements from one or more predecessors, of which outlines can be partially traced in foundations below. Several layers of remains, mostly unexcavated, have been noted on lower terraces to the west, where walls preserved up to the floor level of the upper story have been found. Additionally, a peristyle with Doric half columns may be late third century in date, while further installations might have to do with athletics, cult, and other functions.

Construction of the many-phased building complex involved a range of

materials and building techniques, including grey marble ashlar for the towers and limestone, sandstone, mudbrick, stone rubble, and reused architectural members elsewhere. Remains of polychromatic “Masonry Style” painting have been found in places to accompany floors of crushed limestone and beaten earth, all covered by roofing with stamped tiles. Part of a stone drainage system was uncovered in the courtyard. Various features, including the towered construction, have led scholars to recognize eastern influence, not surprising in light of Demetrius’ Anatolian connections, and even to consider the possible presence of Carian builders at the site (Marzolff 1996: 158 with n. 24).

The Palace at Pergamon

The kingdom of Pergamon, modern Bergama, was founded in 281 BCE by Philetairos (circa 343–263 BCE), the first of the Attalid dynasty, a one-time general under Lysimachos and, as such, a member of the second generation of Alexander’s Successors. Philetairos’ descendant Attalos III (138–133 BCE), perhaps anticipating the inevitable, willed the kingdom to Rome, after which it became the capital of the Roman province of Asia. The fortified acropolis sits on a high mountain ridge that was clearly selected for reasons of security in an age of intense rivalries. Astute military policies, combined with enormous cultural ambitions, saw the construction of an astonishingly rich and showy city that spilled over into its steep theater and beyond to the plain with its public and private districts of all sorts.

The site, well known to early European travelers, has undergone excavation under German leadership from the 1870s to this day. A portion of the finds from the early years can be seen in the purpose-built Pergamon Museum in Berlin. The complexities of the site are daunting, not only by reason of scale, but also because of later occupation by Romans, Byzantines, and Seljuks. The Traianeum of the second century CE, long under anastylosis, is but the most conspicuous evidence of these latecomers. The poorly preserved Hellenistic remains that are conventionally identified as the palace complex, excavated in the 1880s, consist of six building units (“Baugruppen,” or Units, I–VI) that range along the eastern side of the acropolis (Kawerau and Wiegand 1930; Radt 1988: 83–102; Nielsen 1994: 102–111; T. Zimmer 2012: 251–259). Some underwent transformations that disguise their original layout, even as they themselves were built over earlier remains.

Units IV and V, conventionally called Palaces IV and V, are laid out like standard peristyle houses with rooms appropriate for entertaining and dining. Of them, Palace IV, measuring approximately 30 × 35 m, is usually dated to

the reign of Attalos I (241–197 BCE) or Eumenes II (197–159 BCE). The courtyard, originally stone-paved over a large cistern, was renovated, perhaps in mosaic, of which, however, only the bedding survives. A large room on the east side, outfitted with a low marble altar on a mosaic floor, was clearly a private sanctuary. Many fragments of typical “Masonry Style” speak to the nature of the wall decoration, enhanced in one room by a painted band of griffins, antithetically placed on either side of an amphora. In another, remains of a miniature stuccoed band in the Corinthian order with a frieze of possible Erotes ran high up on the wall.

Palace V, dated to the reign of Eumenes II (197–159 BCE), is much grander at approximately 2420 m², with a courtyard measuring 22.50 m on a side. The use in its foundations of discarded building material from the second-century Great Altar is an important dating factor. A cistern lies under the west portico, so too does an earlier storage facility. Wall thickness implies an upper story, though no stairs remain. A sturdy base midway along the west side of the courtyard may have supported an altar. The so-called Altar Room, a small, gated room in the northeast corner, approximately 3 m², had a tessellated pictorial mosaic floor with garlands, a colorful parakeet ([Figure 20.4](#)), and tragic masks flanking an altar that may have been sacred to Dionysus (Dunbabin 1999: 28–29, Fig. 28). A larger room in the same palace, approximately 8.50 m², preserved a floor with rinceaux enlivened by Erotes and grasshoppers and, importantly, the signature of the mosaicist Hephaestion (Dunbabin 1999: 29, Fig. 29).



Figure 20.4 Detail of mosaic floor with parakeet from the so-called Altar

Room in Pergamon Palace V (Antikensammlung der Staatlichen Museen zu Berlin inv. Mos. 71).

Source: bpk, Berlin/Antikensammlung/Juergen Liepe/Art Resource, NY.

The palace complex is currently undergoing a welcome reinvestigation, with a view toward integrating Palaces IV and V into the larger conglomeration spread across much of the rest of the acropolis. Earlier structures include a large peristyle building (Unit I) that was very likely the first residential palace, whose later use, traditionally called a barracks, is now being questioned. Other installations range from the practical sourcing of water through military and storage facilities to the Sanctuary of Athena Nikephoros (Hoepfner 1996: 1–43; T. Zimmer 2012: 251–259). This sanctuary, though rooted in earlier times, was enhanced to include porticoes and propylon as part of the grand renovation project of Eumenes II that included not only Palace V but also the Great Altar (now partially reconstructed in Berlin), its expanded terrace, and reconfiguration of the Upper Agora. Royal power was visually displayed with victory monuments, including the well-known, but controversial, series of Gauls identified by its fragmentary base at the site and by statuary copies of the Roman period. The Attalids were renowned for their library and royal art collection, fated to join the westward exodus of Greek artifacts to Rome, where they played an influential role in developing tastes.

An expanded version of Pergamon's *basileia* beyond just the residential Palaces IV–V brings the Pergamene acropolis conceptually closer to the situation known in theory from Alexandria and, in fact, from the emerging compound at Pella. The implications are far-reaching. The complex layout that covers administrative, political, and cultural aspects of royal command as seen at Pella, Pergamon, and at the elusive Alexandrian compound found resonance in Rome with the Augustan configuration of the Palatine (Nielsen 1994: 174–178; Gros 1996: 234–239).

FURTHER READING

An important recent resource on the palaces at Vergina and Pella is Lane Fox 2011, with articles by Kottaridi and Akamatis, respectively. For Pella's palace, still under excavation, one should also refer to Chrysostomou 2011. On the Demetrias palace, see Batziou-Efstathiou 2002 and final publications in the *Demetrias* series of the German Archaeological Institute beginning in 1976. On Pergamon see Radt 1988 and detailed studies in the series entitled *Altertümer von Pergamon* starting in 1885 and supplemented since 1968 by *Pergamenische Forschungen*, both published by the German Archaeological Institute. Otherwise, indispensable tools for following developments on individual sites are excavation reports that for Vergina and Pella have

appeared since 1987 in the annual journal *Archaeological Reports on Macedonia and Thrace (AEMTh)*, in Greek with occasional English summaries; reports on Greek excavations at Demetrias since 1985 appear in *Αρχαιολογικόν Δελτίον*; and for Pergamon in various reports from Germany and Turkey (see T. Zimmer 2012 for references). For exploration of Roman adaptations of Hellenistic palaces see an overview in *Hellenistic Palaces* (Nielsen 1994: 171–180), and for greater detail see Gros 1996.

For a broadly based chronological and geographical consideration of palaces and palatial structures throughout much of the ancient world see Nielsen 1994, although there have been significant advances in the field since then. A more specialized but highly productive approach was taken in the essays in Hoepfner and Brands 1996. In it, an international group of experts in diverse areas of the Mediterranean addressed theoretical issues (the concept of royal palaces and political power), architectural arrangements (such as andrones), interior décor (sculpture and dinner services, for instance), landscaping, and a number of regionally based case studies in Macedonia, the Black Sea area, Ionia, Cyprus, Ptolemaic Egypt, Caria, and Palestine.

REFERENCES

- Akamatis, I.M. 2011. “Pella.” In Lane Fox, ed., 393–408.
- Batziou-Efstathiou, A. 2002. *Demetrias*. Athens.
- Buraselis, K., M. Stefanou, and D.J. Thompson, eds. 2013. *The Ptolemies, the Sea and the Nile: Studies in Waterborne Power*. Cambridge.
- Calandra, E. 2011. *The Ephemeral and the Eternal: The Pavilion of Ptolemy Philadelphos in the Court of Alexandria*. Athens.
- Chrysostomou, P. 2011. “The Palace of Pella.” In Lilimbaki-Akamati, Akamatis, Chrysostomou, and Chrysostomou, eds., 58–65.
- Descamps-Lequime, S. 2011. *Au Royaume d’Alexandre le Grand*. Paris.
- Dunbabin, K.M.D. 1999. *Mosaics of the Greek and Roman World*. Cambridge.
- Emme, B. 2013. “Zur Rekonstruktion des Bankettbaus von Ptolemaios II.” *Archäologischer Anzeiger*, 1: 31–53.
- Empereur, J.-Y. 1998. *Alexandria Rediscovered*. New York.
- Fraser, P.M. 1972. *Ptolemaic Alexandria*. Vols. 1–3. Oxford.
- Furtwängler, A., ed. 2003. *Demetrias 6*. Würzburg.

Goddio, F. and M. Clauss, eds. 2006. *Egypt's Sunken Treasures*. Munich.

Gros, P. 1996. "Le Palais hellénistique et l'architecture augustéenne: L'exemple du complexe du Palatin." In Hoepfner and Brands, eds., 234–239.

Hoepfner, W. 1996. "Zum Typus der Basileia und der königlichen Andrones." In Hoepfner and Brands, eds., 1–43.

Hoepfner, W. and G. Brands, eds. 1996. *Basileia: Die Paläste der hellenistischen Könige*. Mainz.

Hoffmann, A. 1996. "Die Casa del Fauno in Pompeji: Ein Haus wie ein Palast (Kurzfassung)." In Hoepfner and Brands, eds., 258–259.

Kawerau, G. and T. Wiegand. 1930. *Die Paläste der Hochburg: Altertümer von Pergamon* 6. Berlin.

Kottaridi, A. 2011. "The Palace of Aegae." In Lane Fox, ed., 297–333.

Lane Fox, R.J., ed. 2011. *Brill's Companion to Ancient Macedon: Studies in the Archaeology and History of Macedon, 650 BC–300 AD*. Leiden.

Lilimbaki-Akamati, M., I.M. Akamatis, A. Chrysostomou, and P. Chrysostomou, eds. 2011. *The Archaeological Museum of Pella*. Athens. E-book.

Marzolff, P. 1996. "Der Palast von Demetrias." In Hoepfner and Brands, eds., 148–163.

McKenzie, J. 2007. *The Architecture of Alexandria and Egypt c. 300 BC to AD 700*. New Haven.

Miller, S.G. 1993. *The Tomb of Lyson and Kallikles: A Painted Macedonian Tomb*. Mainz.

Miller, S.G. 2014. "Hellenistic Painting in the Eastern Mediterranean, Mid-Fourth to Mid-First Century bc." In Pollitt, ed., 170–237.

Nielsen, I. 1994. *Hellenistic Palaces: Tradition and Renewal*. Aarhus.

Pfrommer, M. 1999. *Alexandria: Im Schatten der Pyramiden*. Mainz.

Pirson, F., ed. 2012. *Manifestationen von Macht und Hierarchien in Stadtraum und Landschaft. Byzas* 13.

Pollitt, J.J., ed. 2014. *The Cambridge History of Painting in the Classical World*. Cambridge.

Radt, W. 1988. *Pergamon: Geschichte der Bauten, Funde und Erforschung einer antiken Metropole*. Cologne.

Thompson, D.J. 2012. *Memphis under the Ptolemies*. 2nd ed. Princeton.

Thompson, D.J. 2013. “Hellenistic Royal Barges.” In Buraselis, Stefanou, and Thompson, eds., 185–196.

Zimmer, G. 2003. “Hellenistische Bronzegusswerkstätten in Demetrias.” In Furtwängler, ed., 9–82.

Zimmer, T. 2012. “Zur Lage und Funktion der Basileia in Pergamon.” In Pirson, ed., 251–259.

CHAPTER 21

The Greek Agora

John McK. Camp II

The agora of a Greek city was the center of town in virtually all respects. A large open square, reserved for public gatherings, it was used in a variety of ways: as commercial center and marketplace, as the focal point for political assemblies and elections, for theatrical performances, for athletic contests, for religious rites and processions, for military drill, and for socializing. Not surprisingly, many of the public buildings needed to run a Greek city came to be built around the edges of the square where the citizens were gathering – albeit for different reasons – almost on a daily basis. Administrative, legislative, commercial, judicial, and religious buildings lined the large open square, while inscriptions recording laws and sculptural monuments celebrating great achievements by both individuals and the city were set up there. Long colonnades and fountain houses provided necessary shelter and water to the large numbers of daily visitors. Agoras were the focal point of life in a Greek city, even though they were not regarded as essential in other Mediterranean and Middle Eastern societies. Herodotus (1.153) quotes king Cyrus of Persia: “I have never feared men who have a place set apart in the middle of their city where they lie and deceive each other,” and then he comments, “Hellenes have agoras and buy and sell there; for the Persians themselves do not use agoras, nor do they have any.” Agoras were something of a cultural marker, identifying the presence of Greeks.

Although an agora was a feature of every Greek city, much of the information for the following chapter comes from a single example: the Agora of Athens (Figure 21.1). There are two reasons for this. First, it has been extensively excavated and published over the past 80 years and is unparalleled in the quantity of archaeological material recovered and analyzed. Second, because of Athenian dominance and importance throughout much of antiquity, the literary and epigraphical sources for the city are unusually rich, allowing R.E. Wycherley (1957) to collect no fewer than 731 ancient references that enliven our understand of this particular agora, its uses, appearance, and remains. The range of activities and buildings known for the Athenian Agora over a span of almost eight hundred years allows us to imagine similar facilities and activities in the agoras of other Greek cities, although on a smaller scale.



Figure 21.1 Athenian Agora, Roman period, second century CE. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

Origins

Despite its many functions – political, commercial, social, religious, and military – it seems that civic activities and the administration of justice provided the original impetus for the creation of these large open spaces at the heart of the city. The meaning of the word as a meeting place for deliberation is found in both Homeric epics: in the description of the scenes on the shield of Achilles (*Il.* 18.497ff.) and in the city of the Phaeacians in the *Odyssey* (*Od.* 8.5, 12, 16). The word appears also early on in Hesiod's *Works and Days* (29), and here, too, it is associated with deliberation and the settling of

disputes. The concept, at least, seems to have been in place as early as the eighth century BCE, though physical evidence for the contemporary agoras is hard to come by. It may well be that the earliest known are those on the island of Crete – at Lato, Gortyn, and perhaps Dreros – where there was also a well-established early tradition of law codes and lawgivers.

The agora proper was the open space itself (Figure 21.2), an area defined in Athens by boundary stones, two of which have been found along the edge of the agora square, while another, not found *in situ*, has been recovered for the agora at the Piraeus. Interestingly enough, the markers found *in situ* have the inscription facing inwards, so they can only be read once one is within the area itself, a counterintuitive arrangement for most modern markers, which warn of a liminal area before the boundary is passed. Yet a similar use of a boundary stone is reported by Plutarch in his account of a marker Theseus set up at the Isthmos (*Thes.* 25.3): “he set up that famous stele at the Isthmos and carved upon it the inscription giving the territorial boundaries. It consisted of two trimeters, of which the one towards the east declared: ‘Here is not Peloponnesos, but Ionia’ and the one towards the west: ‘Here is the Peloponnesos, not Ionia.’”

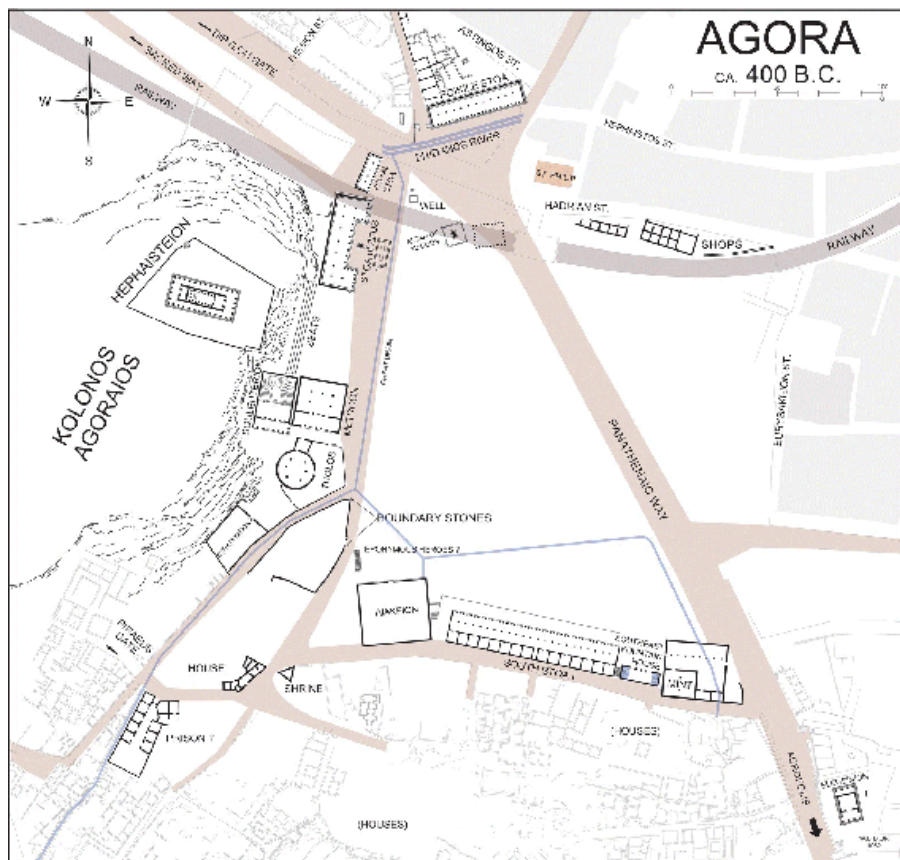


Figure 21.2 Athenian Agora, Classical period, circa 400 BCE. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

There are at least two good reasons why boundary stones were used to define the limits of an agora. Agoras were public land, and the boundary stones marked the area so it could not be infringed upon by private individuals. Such a case is attested for the deme of Sounion, south of Athens, where a citizen made the gift of two plethra of land, because the old square had become too cluttered with unauthorized buildings. *IG II² 1180*, of the fourth century BCE reads as follows:

Voted by the people of Sounion: since Leukios has given to the demesmen to make an agora, to choose 3 men at once, who are to set the boundaries for the agora with Leukios, not less than 2 plethra, one plethra should be open space where the Sounians and who else may wish may buy things, since the present one is now built over. Nor shall it be permitted to the demarch or anyone else to build within the boundaries. (*IG II² 1180.4–21*)

The second need to define the limits of an agora was because it was a religious area. In addition to boundary stones, marble water basins (*perirrhanteria*) for ritual purification stood at the entrances, at least in Athens. “So the lawmaker keeps outside the propitiatory basins of the agora the man who avoids military service or plays the coward or deserts, and does not allow him to be crowned, nor to enter shrines which are publicly maintained,” says Aeschines (3 [*In Ctes.*], 176). People convicted of certain crimes were not allowed in the agora (Dem. 24.60 and 22.77). The Athenian ban for impiety imposed upon the Megarians, preventing them from entering any agora within the Athenian sphere of influence, was one of the principal causes or pretexts for the outbreak of the Peloponnesian War.

City Planning and Urban Design

The city itself is totally dry and not well-watered, and badly laid out on account of its antiquity. Many of the houses are shabby, only a few useful. Seen by a stranger, it would at first be doubtful that this was the famed city of the Athenians. (Pseudo-Dikaiarchos *FHG II*, fr. 59)

Many of the old cities of Greece developed haphazardly over time, and the creation of an agora was a process rather than an event. In Athens, Thucydides tells us that the early city lay south of the Acropolis, not where it was in his day, and various pieces of evidence suggest that an earlier agora lay several hundred meters to the east of the classical agora northwest of the Acropolis. The classical Agora, which has been explored by the American

School of Classical Studies, seems to have been laid out in the second half of the sixth century BCE, with the establishment of two public monuments: the founding of the Altar of the Twelve Gods in 522/1 BCE and the construction of the southeast fountain house and its aqueduct, built to deliver water to that specific location. Thereafter, buildings were added seemingly at random over the next two centuries (Figure 21.2). Those along the west and south sides are more or less aligned, while the orientation of the northern side is determined by the course of the Eridanos river, and the east side shows little sign of planning in the layout of the buildings, several of which are thought to have served as lawcourts (Figure 21.3).



Figure 21.3 Athenian Agora, model, Classical period, circa 400 BCE. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

One must look beyond mainland Greece to find regular, well laid-out public spaces. The early colonies in South Italy and Sicily, where the fair division of previously unoccupied land encouraged a more regular and organized layout for a new city, offer a starting point. One of the claims for an early agora has been made by the excavators of Megara Hyblaia in eastern Sicily, where there is a large open space near the center of the city, lined on two sides with long colonnades or stoas, a common element in many agoras and demonstrably public.

In the latter half of the fifth century BCE, Hippodamos of Miletos was celebrated as a town planner, though exactly what his innovations may have been are not entirely clear. Aristotle (*Pol.* 7.10.4) seems to credit him with

some sort of orthogonal street plan: “The arrangement of the private dwellings is thought to be more agreeable and more convenient for general purposes if they are laid out in straight streets, after the modern fashion, that is, the one introduced by Hippodamos.” A simple orthogonal grid plan, however, which is a feature of many of his designed cities (Miletos, Rhodes, Piraeus, and Thurii), had already been used decades earlier in various settlements dated to the Archaic period (see also [Chapter 17](#)). It seems that the relationship and layout of public spaces, as opposed to private and religious areas, was part of his design, though Aristotle’s other passage (*Pol.* 2. 5.1) is somewhat vague: “Hippodamos, son of Euryphron, a Milesian, who invented the division of cities into blocks and cut up Piraeus ...” The Agora of Piraeus was actually known as the “Hippodamia” or “Hippodamian agora” (Xen. *Hell.* 2.4.11; Andoc. 1. 45; Dem. 49. 22). Thus far, none of his cities has been sufficiently explored to identify his contribution to city planning. Indeed, agoras of the Classical period remain largely and surprisingly unexplored. Other than Athens, only the classical agoras of Corinth, Argos, Olynthos, and Elis have been excavated.

It is not really until the fourth century and the Hellenistic period that we regularly find the agora as an organized rectilinear space laid out near the center of the city and accommodated in its grid. Such agoras are particularly common in Asia Minor, at sites such as Priene, Pergamon, Magnesia, Ephesos, and Miletos. Often they consist of a complex of stoas set in the form of a Greek pi, surrounding the open space on three sides. The fourth side accommodates a major street and a fourth, detached, stoa; the south agora at Miletos and the Agora of Priene are good examples of this arrangement. It is Pausanias, in his description of the Agora of Elis (6.24), who articulates the concept that the largely enclosed peristyle courtyard was a feature of agoras in Ionian cities, whereas a looser arrangement of stoas, set somewhat apart from one another, was to be found in the agoras of older cities: “The agora of Elis is not after the fashion of the cities of Ionia or the Greek cities near Ionia; it is built in the older manner, with stoas separated from each other and with streets through them.” As noted, this observation has been largely borne out by the available archaeological evidence, particularly for Elis, excavated by the Austrians between 1910 and 1914.

The enthusiasm for a strictly rectilinear plan, colonnaded perimeters, and axial and visual symmetry becomes the accepted norm, used thereafter as a fully enclosed peristyle courtyard in Greek cities throughout the centuries of the Roman Empire (e.g., Hierapolis, Iasos, Smyrna, Aphrodisias, Thessaloniki, etc.). Vitruvius records the differences between a Greek agora and the forum of a Roman city at the beginning of Book 5:

The Greeks lay out their forums in the form of a square surrounded by very spacious double colonnades, adorn them with columns set rather closely together, and with entablatures of stone or marble, and construct walks in

the upper story. But in the cities of Italy the same method cannot be followed, for the reason that it is a custom handed down from our ancestors that gladiatorial shows should be given in the forum. (Vitr. *De arch.* 5.1.1)

The size of the forum should be appropriate to the population of the city, and an important new architectural addition, the basilica, is described. He also indicates that rather than a square like the Greek agora, a forum should be a rectangle, with a length-to-width ratio of 3 : 2. It is noteworthy that the early forum in Rome, like the agora in Athens, developed organically over time and shows little sign of planning or design, in contrast to other fora in Italy (e.g., Pompeii, the imperial fora of Rome), which seem to accord to the specifications of Vitruvius.

Stoas

One of the most recognizable architectural elements used to delineate an agora was the stoa (colonnade) (see also [Chapter 17](#)). Running dozens or even hundreds of meters long, they were ideal for defining a large open space, and almost every agora had a least one, and often as many as four, defining all or part of the perimeter of the public space. They could be as simple as a single colonnade, designed to provide shelter from sun in summer and wind and rain in winter, while providing ample light and fresh air for the hundreds of people expected to congregate in the agora. Over time, stoas became more elaborate, first with the addition of an interior colonnade, then with rooms opening off the back wall. Early examples with rooms, such as at Brauron and the Asklepieion at Athens (and possibly the oikoi at Aliko and the Herakleion on Thasos), appear first in sanctuaries and are arranged for dining. South Stoa I, in the Athenian Agora, also had dining rooms, yet it seems to have been a civic building. By the Hellenistic period, stoas might have a double colonnade, with rooms behind, and the whole arrangement repeated on a second story. In second century BCE, the Pergamenes even developed stoas that were three stories high (Aigai, Alinda, and Assos). Like the squares themselves, stoas and their rooms were multifunctional, used for public offices, lawcourts, shops, public display of booty, dining, storage, and as hangouts.

Fountains and Water

Any area intended to attract large numbers of individuals needed to provide for their most basic requirement: water. Early agoras were either established

near existing fountains, such as Peirene and Glauke at Corinth, or water was piped in to an appropriate facility, such as the archaic southeast fountain house in the Athenian Agora (see [Chapter 17](#), [Figure 17.2](#)). It may not be coincidental that, along with the Altar of the Twelve Gods, the southeast fountain house is the earliest demonstrably public building to be constructed in the area. Until the Hellenistic period, water had to be delivered by means of a gravity-flow aqueduct, which may have affected the placement of an agora. Pressure lines were known by the Hellenistic period, invented perhaps in Ptolemaic Egypt or Attalid Pergamon, allowing water to be conducted almost anywhere.

Proper drainage of a large level area was also a concern and was dealt with at Athens by means of a huge early built conduit which carried excess water to the Eridanos river, while the forum in Rome, of course, only became viable with the construction of the *Cloaca Maxima*. The Greeks made no archaeologically recognizable provisions for other needs; large communal latrines, a feature of many agoras, gymnasia, theaters, and sanctuaries, are found only in the late Hellenistic and early Roman periods.

Civic Life and Politics

As we have seen, the earliest uses of the word “agora” emphasize its primary function as a place of political assembly and public deliberation, and the archaeological evidence supports this. The square itself could be used for large assemblies, elections, and (in the case of Athens) ostracisms.

Smaller deliberative bodies were housed in council chambers (*bouleuteria*) near the square (e.g., at Athens, Priene, Miletos, Ephesos, and Troy (Ilion)). Early on, these were simple rectangular buildings with level seating, and a sufficiently large interior space could be created by one or more rows of columns. In the Hellenistic period, the seating consisted of banked rows of benches. In many examples the seating is curvilinear, like a small theater (e.g., Miletos, Nysa, Stratonikaia), though benches set in a rectangular arrangement are also common (e.g., Priene, Notion, Sagalassos). (See also [Chapter 24](#).)

Other administrative activities were accommodated as well, in buildings or rooms often referred to as *archeia*, facilities for assorted magistrates and other officials charged with running the city on a day-to-day basis. A large polis would have dozens, if not hundreds, of such officials, requiring numerous civic buildings, sometimes collegial and shared, sometimes specific to a single magistrate. Even an abbreviated list for Athens from Aristotle’s *Constitution of the Athenians* gives some idea of the numerous officials requiring facilities of some sort: eponymous archon, king archon, polemarch, 9 archons

(*thesmothetes*), 10 generals (*strategoi*), 10 revenue collectors (*apodektai*), 10 accountants (*logistai*), 10 city wardens (*astynomoi*), etc. Facilities would be needed also for archives, and the scribes and clerks they required.

A building that was a feature of every Greek city, set in or near the agora, was the *prytaneion*. Within this building burned a flame of Hestia, symbolic of the hearth of the city, never to be extinguished. The building also served as the dining hall for high magistrates and important individuals, where ambassadors from elsewhere were entertained as well. One of the highest public honors available to a citizen was maintenance for life (*sitesis*) in the *prytaneion*. Offices for magistrates and archives were also often housed in the building. Given its functions, the plan of a *prytaneion* should consist of a courtyard open to the sky, with a central hearth or altar, and dining facilities, usually recognizable by doors set off-center to accommodate the largest possible number of dining couches, and a low raised border to carry the couches. Numerous *prytaneia* have been claimed for many cities, with greater or lesser probability. Those recognized with a high degree of probability, supplemented by inscriptions and dedications to Hestia, include Lato, Priene, Delos, and Ephesos. The *prytaneion* at Athens lies unexcavated, some 500 m east of the classical Agora. It is mentioned by Pausanias in his description of Athens, and its position should indicate the location of an early agora, laid out before the one which has been excavated to the northwest of the Acropolis. Religious scruples and tradition will presumably have prevented its relocation to the new center of town.

In general, the buildings housing the government in the Classical period were surprisingly modest in construction: walls of stone and/or mudbrick, columns of limestone, floors of packed clay, and roofs of terracotta tiles were the norm, at least in Athens, as in the Tholos, Bouleuterion, Royal Stoa, South Stoa I, Mint, and Square Peristyle (lawcourts). When the Athenian people built for themselves, they did not waste any money. Marble, sculptural adornment, and costly materials were largely reserved for the gods both in the Agora (Stoa of Zeus, Hephaisteion) and elsewhere, particularly on the Acropolis. And, despite its prominence, at all periods the Panathenaic Way, the principal thoroughfare of the city, was unpaved for almost its entire length, surfaced only with successive layers of packed gravel (Figure 21.3 and Figure 21.4).

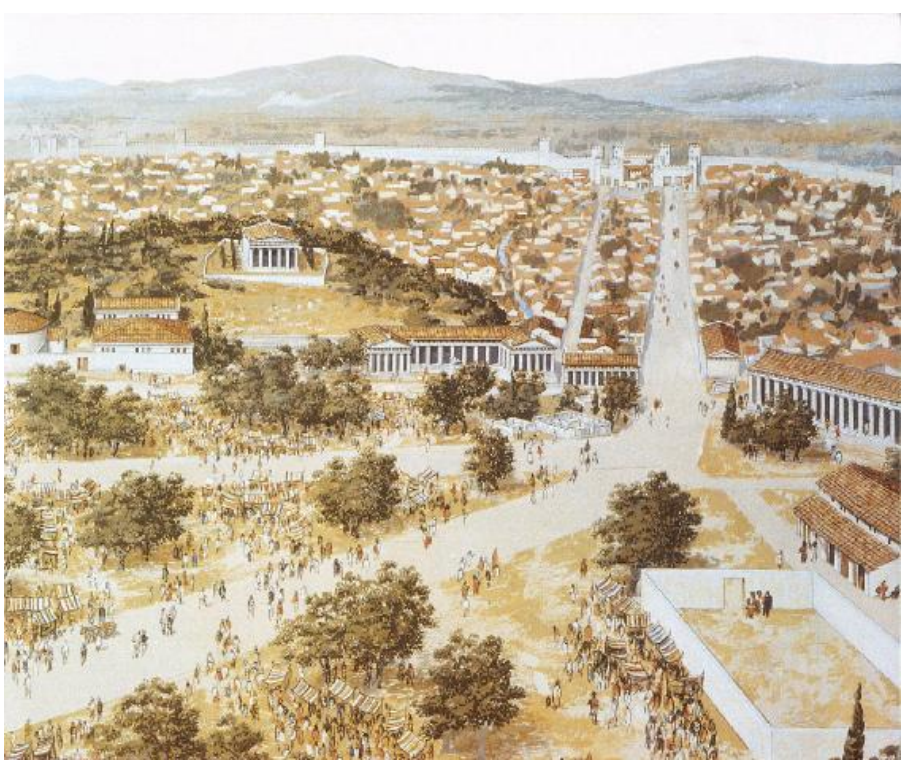


Figure 21.4 Athenian Agora, artist's view by Peter Connolly, fifth century BCE.

Source: John McK. Camp.

Athenaeus humorously comments (14. 640b/c): “You will find everything sold together in the same place in Athens: figs, summoners, grapes, turnips, pears, apples, witnesses, roses, medlars, haggis, honeycombs, chickpeas, lawsuits, beestings, beestings-pudding, myrtle, allotment machines, hyacinth, lambs, waterclocks, laws, indictments.” As is clear from this passage and archaeological evidence from both Athens and elsewhere, official business – though nominally primary – was not significantly protected from aggressive commercial activity.

Commerce

Each of you is in the habit of frequenting some place, a perfumer's shop, a barber's, a cobbler's, and so forth; and the greatest number visit those who have their establishments nearest the agora, the smallest number those who are furthest from it. (Lys. 24.20)

As noted, our earliest sources suggest that the primary function of an agora

was as a political meeting place. It appears as such in Homer, Hesiod, and the lyric poets, and as late as Aeschylus and Pindar in the first half of the fifth century BCE. By the later fifth century, however, in Herodotus and Aristophanes, the commercial aspects of the agora are clearly referred to, and the concept of the agora as primarily a marketplace becomes well established thereafter in most cities and sources.

Starting with Homer (*Od.* 159–164), there is in the heroic tradition an abiding disdain for trade and business that survives well into the fourth century BCE (Xen. *Mem.* 3.7.5–6). In practical terms, this is occasionally expressed in the conservative societies in Thessaly and Crete by means of two distinct and separate agoras, one for politics, the other for commerce:

And below this place should be built an agora of the sort customary in Thessaly, which they call free, which it is necessary to keep clear of all merchandise, and into which no artisan or farmer nor anyone of that type can go unless summoned by the magistrates ... The agora for merchandise must be different and separate from this one. (Arist. *Pol.* 1331a)

Two inscriptions from Demetrias designate an agora as being sacred (i.e., *hiera*; *IG* XII 2.1105, 1106), suggesting that this practice of separate agoras continued in Thessaly into the Hellenistic period. Indeed, large cities in other areas, especially those with ports, often had two agoras, one largely devoted to commerce and trade, the other to politics and administration (e.g., Ephesos, Miletos, and Piraeus (Paus. 1.1.3), and, later, Pergamon).

As the primary market area of the city, an agora was also the focal point of the regulation of the economy, and several groups of officials, such as the *agoranomoi* (market police), *metronomoi* (officials in charge of weights and measures), *poletai* (state auctioneers), and *sitophylakes* (grain commissioners), held office in buildings around the square in Athens. One of the mints (*argyrokopeia*) of Athens has been found at the southeast corner of the agora, while a similar installation has been identified in the Agora of Pella. *Agoranomia*, the headquarters of the market police, are attested epigraphically in Athens and Piraeus, as well as many other cities, largely in the east, such as Cyzicus, Rhodes, Delos, Samos, Amorgos, Pergamon, Tralles, and Iasos. Official sets of bronze weights and dry measures of both terracotta and bronze have been found in Athens, while marble plaques cut to serve as standards for roof tiles have been found in Athens, Assos, and Messene.

Commercial activity was carried out in a variety of buildings, most conveniently in the rooms of the large stoas lining the agoras, presumably rented out by the city to provide revenue. This arrangement is specified in an inscription from Miletos, concerning a stoa dedicated by king Antiochos in 299/298 BCE (Rehm 1958: No. 480, ll. 10–14). By the Hellenistic period, stoas with rooms serving as shops and entire floors given over to storage were common (e.g., Aigai, Alinda, Herakleia-by-Latmos, Assos). With 42 shops on

two levels under a single roof, the Stoa of Attalos resembled a modern mall, and it served as the commercial center of Athens for over four hundred years. A more developed formal plan of enclosed peristyle courtyards with rooms/shops behind the colonnades become common in Hellenistic agoras such as those of Miletos, Nysa, and Ephesos. In the Roman period, similar but smaller well-defined peristyle courts with rooms were used as markets and became known as *macella*.

In addition to the shops of the surrounding stoas, less official commercial buildings surrounded many agoras. In Athens these take the form of a row of small square rooms, each with a door opening directly off a street or a group of rooms set along either side of a common interior passageway. Their prominent locations and fairly substantial construction make it uncertain whether they are entirely public or private enterprises, though it seems clear that they were commercial in function. More informal still were individual rooms attached to private houses but with a separate door opening directly onto street, often with no direct connection into the house (as at Olynthos and Athens). Even less substantial were the temporary booths of wickerwork and tables set up for market activities within the square, leaving little or nothing in the archaeological record but attested in several ancient sources (e.g., Dem. *De cor.* 18.169; Pl. *Ap.* 17c).

Cult, Religion, and Festivals

Many of the early references to agoras suggest a close affinity or connection to the gods and heroes: agoras are often in or near sanctuaries and are adorned with altars to the gods. The Agora of Troy was near the Sanctuary of Athena (*Il.* 6.88) and Apollo (*Il.* 5.460), the agora of the Phaeacians was sacred to Poseidon (*Od.* 6.266; 7.44; 8.5; 12.109), and that of Nestor was sacred to Athena (*Od.* 3.444–445). Archaeology has also borne out this close connection with the gods. The Athenian Agora, for instance, has no fewer than 28 cult installations, ranging from large peripteral marble temples to the most modest of receptacles for libations. Other agoras have similarly close associations with cult activity, such as Magnesia-on-the-Maeander, Corinth, Priene, and Megalopolis. One of the earliest altars attested for the Agora of Athens is that dedicated to the Twelve Gods by the younger Peisistratos in 522/1 BCE. The Twelve Gods appear also in the agoras of Xanthos and Magnesia-on-the-Maeander (Dittenburg *Syll.*³ no. 589). Other deities carry the epithet *agoraios*, particularly Zeus (18 cities) and Hermes (10 cities), along with rarer instances of Athena, Artemis, and Aphrodite. Tombs and/or cults of city founders (15 cities) or other significant local heroes (27 cities) were often to be found in the agora (e.g., the heroön for Theagenes in the Agora of Thasos).

The large open square, capable of holding thousands of people, was a natural venue for large-scale spectacles of various types, which were often performed as part of some religious festival. Early on, for instance, the Athenian Agora was used as a venue for dramatic performances, and a part of the square was known as the *orchestra* (dancing ground). The seating for spectators consisted of the large temporary wooden structures of scaffolding, known in Greek as *ikria*, and in colloquial English as “bleachers.” Hesychius described *ikria* as constructed from poplar trees and being “upright timbers, with planks attached to them, like steps; on these planks the audience sat, before the theater was built” (Hsch., sv. *ikria*). *Ikria* are illustrated as early as the early sixth century BCE on a dinos painted by Sophilos that shows the seated audience at the funeral games of Patroklos. We are told (Suidas, sv. *Pratinas*) that when a set of these in the Athenian Agora collapsed during a dramatic performance in the early fifth century BCE the plays were transferred to the Sanctuary of Dionysos, south of the Acropolis, where the theater is built into the slope of the hill. Banked rows of seats creating an early theatral area at the edge of an open space are also recorded at Dreros and Lato on Crete and at Morgantina in Sicily. (See also [Chapter 25](#).)

Perhaps the most compelling spectacle of all in Athens was the huge procession held as part of the Panathenaic festival in honor of Athena. The parade involved hundreds of individuals and animals, described by Aristophanes and depicted on the frieze which decorated the Parthenon: priests and priestesses, *kanephoroi* (aristocratic maidens carrying sacrificial paraphernalia), stool-bearers, water-bearers, parasol-bearers, musicians (flutes and kitharas), olive-branch-bearing elders, sacrificial cows and sheep, and a huge contingent of cavalry (see [Chapter 11](#) and [Chapter 12](#)). All the participants would be elegantly dressed in their best finery, and the display must have been magnificent as it made its way through the Agora and up the slopes to the Acropolis. The literary evidence suggests that this parade was held for close to a thousand years, from the sixth century BCE until at least the fourth century CE. The Panathenaic Way, the broad route followed by the procession, passed through the Agora and has been excavated at various points. More than sixty superimposed layers have been recorded, also covering a period of over a thousand years. Here, too, special temporary stands, or *ikria*, were set up along the course of the street to provide spectators with a good view as the parade went by. Cuttings for their supports have been excavated at the shoulder of the road at several points along its course through the Agora.

Athletic Competition

You will find that at other cities statues of athletes are set up in the agoras,

at Athens statues of good generals and tyrannicides. (Lycurg. *Leoc.* 51)

In Homer, the agora of the Phaeacians was used as a venue for athletic contests (*Od.* 8.109ff.). It may well be that one of the earliest recognized needs for a large open space of the sort we associate with agoras was indeed for athletic competition and display. There is reason to believe the the classical agoras of Athens, Corinth, Elis, and Argos were all equipped with running tracks. It is also worth noting that Vitruvius (*De arch.* 5.1.1) regards the layout of the forum in Italy and the design of the surrounding buildings as dictated primarily by its function as a venue for gladiatorial displays.

In Athens, a festival in honor of Athena with a strong athletic component, the Panathenaia, was founded or reorganized on a grand scale by the tyrant Peisistratos in 566 BCE, some two hundred years after the Olympics, but only a decade or so after the other three Panhellenic games, at Delphi, Isthmia, and Nemea. The program at Athens was somewhat different from the four Panhellenic games in several important aspects: some contests were open only to Athenians, there were prizes of value, there were prizes for more than just first place, and there were team competitions. These last three aspects perhaps reflect the democratic politics of Athens, in contrast to the essentially aristocratic ethos of the Panhellenic games, with their emphasis on individual achievement.

It seems likely that a close relationship between the games and the agora square goes back to the origins of both in the sixth century BCE. One of the earliest public inscriptions from Athens, though fragmentary, seems to refer to a *dromos*, which means a race-track (and used as such in the *Odyssey*, Book 8). The same term was used for the Panathenaic Way as late as the fourth century CE (Himer. *Or.* 3.12). It seems likely that part of the Panathenaic Way, used as the processional route for the festival, also served as the racecourse for the games. Excavations have shown that the surfaces of the road in the fifth century BCE were made of carefully screened material, with no stones at all, packed very smooth and very level – an ideal running track. What is of particular interest is that two other classical agoras excavated in Greece, at Corinth and Argos, both have racetracks as well; there are well-defined starting lines with the characteristic grooves for the runners' starting positions. It can be argued that the initial laying-out of a large open space in the middle of a Greek city was for an athletic venue, and that most of the other uses as an agora came later.

Over time, specific facilities for spectacles and competition were built elsewhere, replacing early facilities in the agora. Thus the orchestra in the Agora of Athens and the dancing ground (*choros*) of Sparta were replaced by theaters, and racetracks for men and horses gave way to stadia and hippodromes. In Athens, one very old-fashioned event continued to be held in the Agora square: the *apobates*. This involved a man in armor jumping on and

off a moving chariot driven by a second man. The finish line seems to have been the Eleusinion, just southeast of the square (Neils and Schultz 2012). This unusual event is very archaic or even heroic, since there is little evidence the classical Athenians used chariots in warfare in the historical period.

Military Activity

An agora was the ideal mustering point in times of trouble, a place where troops could gather in sufficient numbers, at the center of a network of roads leading out in all directions, allowing a rapid response to whatever part of the city or its walls were threatened and in need of defense. The open space of an agora was also, of course, an ideal spot to practice military drill, and there is evidence that the agoras of both Athens and Elis were used for cavalry activity.

In Athens, reliefs showing cavalry contingents, honorary decrees for the hipparchs and phylarchs (cavalry commanders), tokens, and part of a cavalry archive all cluster together at the northwest corner of the square, suggesting that somewhere nearby was the *hipparcheion* (headquarters of the cavalry commanders), though no specific remains have been identified. A fragment of the fourth-century comic poet Mnesimachos, cited by Athenaeus, preserves an extraordinary correlation between literature and archaeology: “Go forth from the chambers roofed with cypress wood, Manes; go to the agora, to the Herms, the place frequented by the phylarchs, and to their handsome pupils, whom Pheidon trains in mounting and dismounting” (Ath. 9.402f). The Herms were a series of primitive statues set up at the northwest entrance to the Agora, just where a series of clay tokens issued by Pheidon “the Hipparch in Lemnos” were found in a nearby well. The large space of the agora and the wide surface of the Panathenaic Way at this point apparently made a convenient and useful place to train and exercise the cavalry. The people of Elis, according to Pausanias, even called their agora the hippodrome, because they also used it for training horses (6.24.2).

Memorial Display and Public Honors

Pass on in thought to the Stoa Poecile too – the memorials of all your great deeds are set up in the Agora. (Aeschin. 3.186)

Not surprisingly, given its public nature, the agora of a city was deemed the appropriate repository of monuments commemorating military triumphs. The buildings themselves, of course, could have been built from the proceeds of successful military campaigns, such as the stoa built in the sixth century BCE

in Sikyon with spoils from Kirra (Paus. 2.9.6); the stoa seen by Pausanias in the Agora of Elis (6.24), which was constructed from the booty taken from the Corcyraeans; the *Persike* at Sparta (Paus. 3.11.3; 3.17.4); and the stoa at Thebes, built with spoils from Delion (Diod. Sic. 12.70.5).

In Athens, several buildings, as well as the square itself, were used for such military display. The Stoa Poikile, or the Painted Stoa, built circa 470 BCE, was used for the display of various memorials (Figure 21.5). The paintings described by Pausanias (circa 160 CE) showed Athenian military triumphs, both mythical and historical: the Athenians fighting Amazons, the fall of Troy, the victory over the Persians at Marathon, and the Athenians defeating the Spartans at Oinoe. In a sense, these paintings collectively may be thought of as an early museum: art on permanent public display. The paintings were exhibited in the Stoa for well over six hundred years. The building also displayed more tangible evidence of Athenian triumphs: shields taken from the enemy in battle. Pausanias saw a group taken from the Spartans at Pylos (425/4 BCE) and others from a victory at Skione (421 BCE). One example of the shields from Pylos, carrying the inscription “The Athenians from the Lacedaimonians at Pylos,” has actually been recovered in the excavations. Also from the Peloponnesian War is an inscribed bronze spear butt taken from the rebellious allies of Lesbos in 428 BCE and dedicated to the Dioskouroi (the sons of Zeus, Castor and Pollux). Later trophies and statues celebrating military success were set up in front of or near the stoa in the Hellenistic period.

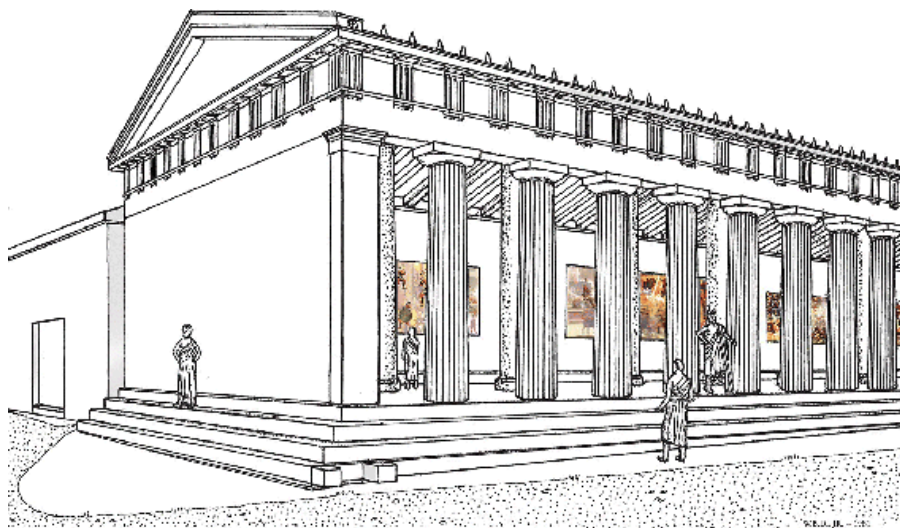


Figure 21.5 Stoa Poikile, reconstruction by W.B. Dinsmoor, Jr. Courtesy The American School of Classical Studies at Athens, Agora Excavations.

Source: American School of Classical Studies at Athens.

According to Pausanias (1.26.2 and 10.21.5–6), other shields, in this case

belonging to those Athenians who died fighting for the freedom of Athens, were displayed on a different building, the Stoa of Zeus Eleutherius (Freedom). The wall of this stoa was also decorated with a painting of the battle of Mantinea (362 BCE), when the Athenians and their allies checked the rising power of Thebes.

Among the earliest known victory dedications in the Athenian Agora were three Herms, set up to commemorate victories in the aftermath of the Persian wars. In the fifth century, such memorials did not honor individuals; the name of the victor, Kimon, did not appear on the Herms, dedicated after the victory at the Eurymedon river, and the name of his father, Miltiades, did not appear in the painting of Marathon in the Stoa Poikile. Things changed in the fourth century, however, when statues of successful generals – Chabrias, Timotheos, Konon – were set up in the square. Indeed, Aristides reports that “they [were] rewarded with the highest and most distinguished honors, setting them up in bronze in the agora, and giving them a seat beside the gods on the Acropolis” (Aristid. *Or.* 53. 23/4).

The concept of personal honor was an extraordinarily important aspect of classical Greece. Just as athletes in the Panhellenic games competed for nothing more than a wreath, so the Greeks contended for recognition in the political arena. In a society which had few tangible luxuries, honors conferred by the state were coveted prizes. Thucydides (2.46) articulates the concept in his account of the funeral oration of Pericles: “for where the prizes for virtue are greatest, there are found the best citizens.” Among the highest honors available would be the statue of an individual set up in the agora of a city. Pausanias, in his tour of Greece, lists many such honorary statues, and dozens of decrees from various Hellenistic cities survive, recording this honor; they usually specify that the statue is to be set up “in the most visible place” in the agora or a sanctuary. Most of them indicate that the statue was to be of bronze, and because bronze can be melted down and reused, only a handful of such statues survive. What do survive are the hundreds of inscribed bases with the cuttings that anchored them, and many excavated agoras have revealed a long row of such bases, set side by side. Over time, the accumulation of such monuments made the agora of the city the repository of its history, where its military successes, prominent citizens, and allies were commemorated and celebrated, in large part to impress the present inhabitants and to encourage emulation.

Conclusions

Greek agoras were in some sense the first truly public gathering places, designed to provide a focal point at the heart of the city, and they are an important element in the rise of urbanism. The buildings required were stoas,

a bouleuterion, a prytaneion, fountains, temples and altars, civic offices, and markets; but it was the open space itself, defined by these buildings, which provided the venue for political, commercial, cultural, religious, military, and social activities. Regardless of the political system in force, all Greek cities seem to have had one. They are paralleled in antiquity by similar centers: the fora of the cities of the Roman Empire. In the first century, Vitruvius called for a forum appropriate to the size of the city, and as Rome grew during the empire, so too did the number of imperial fora, five of them, built near to the old Forum Romanum to accommodate the growing population.

Constantinople, with its estimated population of 500 000, had a series of seven Imperial fora, spread out along the major thoroughfares.

The concept survived in the piazzas of the city-states of Renaissance Italy, and eventually in most of the larger, later cities of Europe. The scale of modern post-Renaissance cities do not lend themselves to a single obvious center of town, and this is perhaps an element in their weakened viability as political and social entities. It may be no coincidence that the earlier creative, vibrant, largely successful, and enlightened cultures all have in common a well-defined city center, which begins with the agoras of Greece, is paralleled by the fora of imperial Rome, and echoed in the piazzas of Renaissance Italy.

FURTHER READING

The Athenian Agora, featured prominently in this chapter, is excavated by the American School of Classical Studies at Athens. The excavation series, *The Athenian Agora*, is wide-encompassing (and continually growing), covering many aspects of the Agora: literary testimonia (Wycherley 1957); the history and development of the Agora (Thompson and Wycherley 1972); the lawcourts (Boegehold 1995); and various studies of material found in the Agora (e.g., coins, inscriptions, painting, pottery, sculpture). Further detailed studies can be found in the various titles of the *Hesperia* supplements, such as Lynch 2011 and Rotroff 2014. Camp 1986 and 2010 offer excellent overviews of the site. For the agora more generally in the Greek world, see Martin 1951, Kenzler 1999, and Mertens 2006. Coulton 1976 provides the best survey of the Greek stoa to-date. For the political buildings associated with the agora, consult McDonald 1942 for a general treatment of the prytaneion, Miller 1978, and Gneisz 1990 for a synthesis of the bouleuterion. Rotroff 2009 discusses commerce related to the agora. See Robinson 2011 for a discussion and bibliography related to water and fountains in the agora.

REFERENCES

Boegehold, A.L. 1995. *The Lawcourts at Athens: Sites, Buildings,*

- Equipment, Procedure, and Testimonia*. Athenian Agora 28. Princeton.
- Camp, J. McK II. 1986. *The Athenian Agora, Excavations in the Heart of Athens*. London.
- Camp, J. McK II. 2010. *The Athenian Agora Site Guide*. Princeton.
- Camp, J. McK II and C. Mauzy, eds. 2009. *The Athenian Agora: New Perspectives on an Ancient Site*. Mainz.
- Coulton, J.J. 1976. *The Architectural Development of the Greek Stoa*. Oxford.
- Gneisz, D. 1990. *Das Antike Rathaus*. Vienna.
- Kenzler, U. 1999. *Studien zur Entwicklung und Struktur der griechischen Agora in archaischer und klassischer Zeit*. Frankfurt.
- Lynch, K.L. 2011. *The Symposium in Context: Pottery from a Late Archaic House near the Athenian Agora*. *Hesperia*, Suppl. 46. Princeton.
- Martin, R. 1951. *Recherches sur l'agora grecque: études d'histoire et d'architecture urbaines*. Paris.
- McDonald, W. 1942. *Political Meeting Places of the Greeks*. Baltimore.
- Mertens, D. 2006. *Städte und Bauten der Westgriechen: Von der Kolonisationszeit bis zur Krise um 400 vor Christus*. Munich.
- Miller, S.G. 1978. *The Prytaneion, its Function, and Architectural Form*. Berkeley.
- Neils, J., and P. Schultz. 2012. "Erechtheus and the Apobates Race on the Parthenon Frieze (North XI–XII)." *AJA*, 116: 195–207.
- Rehm, A. 1958. *Didyma*. Vol. 2. Berlin.
- Robinson, B.A. 2011. *Histories of Peirene: A Corinthian Fountain in Three Millennia*. *Ancient Art and Architecture in Context* 2. Princeton.
- Rotroff, S.I. 2009. "Commerce and Crafts around the Athenian Agora." In Camp and Mauzy, eds., 39–46.
- Rotroff, S.I. 2014. *Industrial Religion: The Saucer Pyres of the Athenian Agora*. *Hesperia*, Suppl. 47. Princeton.
- Thompson, H.A., and Wycherley, R.E. 1972. *The Agora of Athens: The History, Shape, and Uses of an Ancient City Center*. Athenian Agora 14. Princeton.

Wycherley, R.E. 1957. *The Literary and Epigraphical Testimonia*.
Athenian Agora 3, Princeton.

CHAPTER 22

Athletics: Stadia, Gymnasia, Palaistrai, and Hippodromes

David Gilman Romano

Introduction

Athletic events had special significance in ancient Greek culture: competitions were central to religious festivals, especially at the great Panhellenic centers of Olympia, Delphi, Isthmia, and Nemea, and athletic training was a key component of education and military preparation. Over time, purpose-built facilities for training and for staging athletic events became an expected component of any Greek city or large sanctuary. Because athletics were so essential to Greek culture, naturally we find frequent references to them and to athletic facilities in literary, historical, and epigraphical texts. The vocabulary for Greek athletic structures appears at least as early as the sixth BCE, also the time when the earliest structures for athletic events were built and are visible in the archaeological record. Much of this ancient Greek vocabulary for athletic facilities has become part of ours: hippodrome, stadium, palaistra, gymnasium.

The word “hippodrome” is used by Homer (*Il.* 23.330), as is the word “dromos” (*Il.* 23.745). A hippodrome is noted in the context of the preparations for the chariot race that was the first event of the funeral games of Patroklos, and dromos is used in the context of the preparations for the footrace in the same funeral games. The provisions for both events are very simple, as they were made on the plain of Troy and do not include any kind of permanent or substantial architectural elements. The turning post in the chariot race, as described by Homer, is the stump of an old tree about 6 feet high and with two white stones leaning against it. His description of the setting made the funeral games for Patroklos more vivid to his audience.

The word *stadion* probably derives from the Greek verb ἵστημι, “to stand,” and the original meaning was the “standing place.” Although Homer does not use the word “stadion,” he does use the word *stadios*, meaning standing fast and firm. Later stadion had the meaning of the architectural structure, the footrace of 600 feet in length, as well as the linear distance of 600 feet.

From Herodotus (6.126), we hear about Kleisthenes, the tyrant of Sikyon, who won the four-horse chariot race (*tethrippon*) in the Olympic games of 576 or 572 BCE, and who had earlier won the tethrippon at Delphi in 582

BCE. After his Olympic victory, Kleisthenes announced that he had a marriageable daughter, Agariste, and that any man who thought himself worthy enough to marry her should come to Sikyon to be reviewed over the course of the succeeding year. Kleisthenes “had a dromos and a palaistra built” (δρόμον καὶ παλαίστρα ποιησάμενος) for the suitors of his daughter to train in, while he tested them for a year.

The fourth-century BCE orator Aeschines refers to an earlier era (perhaps nostalgically) during the life of Solon, circa 600 BCE, and to regulations for the training of individuals during that time. Aeschines (*In Tim.* 138) states, “Solon forbids the paidotribe [trainer] to open the palaistrai before sunrise and he commands them to close them down before sunset. He prescribes what children are to be admitted as pupils and their age at admission. He provides for a public official who shall superintend them. He regulates the festival of Hermes in the palaistrai.” Also referring to that early era in Athens, Demosthenes mentions that Solon made the regulation that anyone found stealing clothes from any of the public gymnasia would be liable to the death penalty (Dem. 24.114).

Athenians looked to a pre-Solonian time for the origins of the three public gymnasia of Athens (i.e., the Academy, the Lyceum, and the Kynosarges), although there is little archaeological evidence for these from such an early date. Plutarch credits Kimon with waterworks and specific improvements to the Academy, circa 460 BCE. The Academy had been a waterless and dry area and then became a lush, well-watered district with walking and running paths (Plut. *Cim.* 13.8). By the end of the fifth century BCE Aristophanes gives a description of the Academy as a beautiful location for training and camaraderie in the spring (*Nub.* 1005).

Footraces: Dromos and Stadion

From Pausanias (2.27.5) we learn that a dromos and a stadion are not the same and, in fact, have a number of differences. The dromos was the racecourse proper, and the distance between the starting lines of the dromos was measured as 600 feet, although the absolute measure of distance varied from sanctuary to sanctuary, since the foot measure differed from site to site. A dromos could be found without facilities for spectators and, as such, could be either a racecourse for athletes to practice or a simple place for athletes to compete. An example of a dromos at Sparta is mentioned by Pausanias as a place where athletes practiced (3.14.6–7). A stadium, on the other hand, was an architectural facility that combined the dromos with facilities for spectators. The stadium’s “600-foot” lengths, measured between starting lines, varied considerably from site to site, since, just as with the dromos, the foot used to measure the linear distance varied. At Olympia the stadium length was

192.28 m, with a foot measure of 0.3205 m, whereas at Delphi the stadium measure was 177.80 m, with a foot measure of 0.295 m, and at Halieis the stadium measure was 166.50 m, with a foot measure of 0.278 m.

The earliest use in Athens of the word “dromos,” or racecourse, is on several public inscriptions carved on limestone stelai, found on the Athenian Acropolis, and dated circa 566–550 BCE. The stelai (*IG I³ 507, 508, 509*) regulate the construction of a racecourse (or possibly the contests themselves) for the Panathenaic games. In each case the inscriptions begin “they made the dromos for the gods” (τὸν δρόμον ἐποίησαν τεῖ θεοῖ). These preparations likely were for the earliest contests of the Panathenaic games held in the Athenian Agora, under the control of magistrates called *hieropoioi*, the arrangers of sacred events. The “making of the dromos” likely involved a preparation of the Panathenaic Way itself, a straight and level stretch of road in the agora, perhaps near the (later) Altar of the Twelve Gods.

At Corinth, a dromos as an area of competition was built circa 500 BCE, together with a unique curved starting line. The curved starting line was discovered in the Upper Lykaion Road Valley, and is located immediately to the west of the later Roman Julian Basilica ([Figure 22.1](#); see [Rorres and Romano 2005](#)). The preserved length of the starting line is over 12 m, and its width is between 1.25 and 1.30 m, although its original length is probably between 16 and 17 m. The top surface of the starting line is smooth and was plastered and painted a dark blue–black color in a fresco technique. The starting line itself was constructed of rectangular limestone blocks that are joined with a thin cement. Individual grooves for the toes of the front left foot and the rear right foot were cut into each of the poros blocks, after which the top of the blocks was plastered and painted. The border of the starting platform was painted white to create a contrast with the starting line. Red letters indicating lane numbers were also painted on the finished surface of the starting line between each pair of toe grooves. The 17 starting positions for the athletes were numbered from alpha at the south to pi at the north end; the central position was unnumbered although the toe grooves were cut. The numbers were meant to be read from the eastern side of the starting line, looking west, in the direction of the racecourse. Unfortunately, the five southernmost positions were destroyed during the construction of the subsequent Hellenistic starting line.



Figure 22.1 Curved starting line, Corinth, circa 500 BCE.

Source: Corinth Excavations, American School of Classical Studies at Athens.

Each of the toe grooves has a vertical back wall and a beveled front wall. The distance between the front and rear toe grooves at each starting position varies considerably, from 0.60 to 0.87 m. These widely spaced toe grooves are virtually unique in Greek athletics. In addition, the curved starting line did not include any post-holes that would have provided lane dividers or turning posts or attachments that might suggest a mechanical starting device, the *hysplex*, that would become common in later stadia (see Valavanis 1999).

Archaeological evidence exists for a later, straight starting line (ca. 270 B. C.

E.) that was constructed on top of the earlier archaic starting line. Parts of the racecourse floor found nearby were found to be composed of crushed limestone. The curved starting line was the location of the start of a distance race of more than two lengths of the dromos and the curve allowed each of the competitors an equal distance to run to a certain point on the track. Possibly the curved starting line was used in a race for girls at Corinth, perhaps in the Hellotia, a festival of Athena Hellotis.

One of the characteristics of the earliest stadia is that one end of the dromos, and one of the starting lines, was often located near the altar of the deity in whose honor the contests were held. This is true at both Olympia and Isthmia as well at a number of other Archaic and Classical sanctuaries, including the Sanctuary of Apollo at Halieis. In its earliest form, the stadion was a flat, usually rectilinear, space 600 feet long and 50–100 feet wide, often bordered by natural or artificial embankments of earth for the accommodation of the spectators.

The word “stadion” is first used in Greek literature in the early fifth century BCE in the poetry of Simonides, Pindar, and Bacchylides; throughout their odes composed in honor of athletic victors are many references to the stadion as a structure and a race, and also to *stadiodromos* runners. Later in the fifth century BCE, Herodotus and Thucydides use “stadion” as a measure of distance. Herodotus (2.149) defines the stadion as the equivalent of 6 *plethra*, 100 *orguiiai*, or 600 feet.

In an early appearance the word “stadion” is found on a prize Panathenaic amphora now in the Metropolitan Museum of Art (1978.11.13). On the obverse of the vase is an image of an armed Athena, striding to the left; the reverse depicts three sprinting runners, and the athletic scene includes a painted inscription giving the name of the contest for which the amphora was won. The inscription reads “of the stadion race for men” (ἀνδρῶν σταδίό). The amphora is dated to the mid-sixth century BCE and thus pre-dates the first literary use of the word by at least 20 to 30 years.

The architectural evidence for Greek stadia first appears in the sixth century BCE in the form of embankments for spectators at the Sanctuary of Zeus at Olympia and at the Sanctuary of Poseidon at Isthmia. These were simple, but sophisticated, arrangements for spectators to watch the contests that would have taken place on the dromos of the stadium. The artificial embankments took the form of banked earth between low stone foundation walls that gave the standing spectators a slight elevation from which to watch the contests from the sides, or the ends of the stadion. At both Olympia and Isthmia no trace of the racecourse floor was found in association with the spectator embankments, as this was probably destroyed in the construction of later versions of the stadia at the same sites.

Stadia had a growth and evolution of design over the course of many

centuries. At Olympia, for instance, there are the partial remains of two successive stadia; a third (earlier) stadion is hypothesized. The earliest remains date to the middle of the sixth century BCE in the form of a portion of the stone foundations and artificial embankment for the southern spectator area. In the fifth century BCE, the stadium was enlarged when embankments were added on the east and west ends of the stadium. The northern embankment remained the natural hillside of the Kronos hill. This larger fifth-century stadium was then modified in different ways over the course of many centuries, but it remains one of the best known of all ancient stadia (Figure 22.2). This facility was characterized by having a dromos of 192.28 m (measured between its limestone starting lines), and the track was approximately 30 m wide. The borders of the dromos had a water channel at ground level with periodic basins for the collection of water. The long north and south sides of the stadium were convex to the dromos so that the long spectator sides were bowed out, making it easier for those on the embankments to watch the contests. There were no seats for the spectators, but the capacity of the embankments is estimated at 45 000 standing individuals. Seats were provided for the *Hellanodikai*, the judges, and for the Priestess of Demeter. In addition several seat blocks dating to the sixth century have been found for *proxenoi*, the consuls.

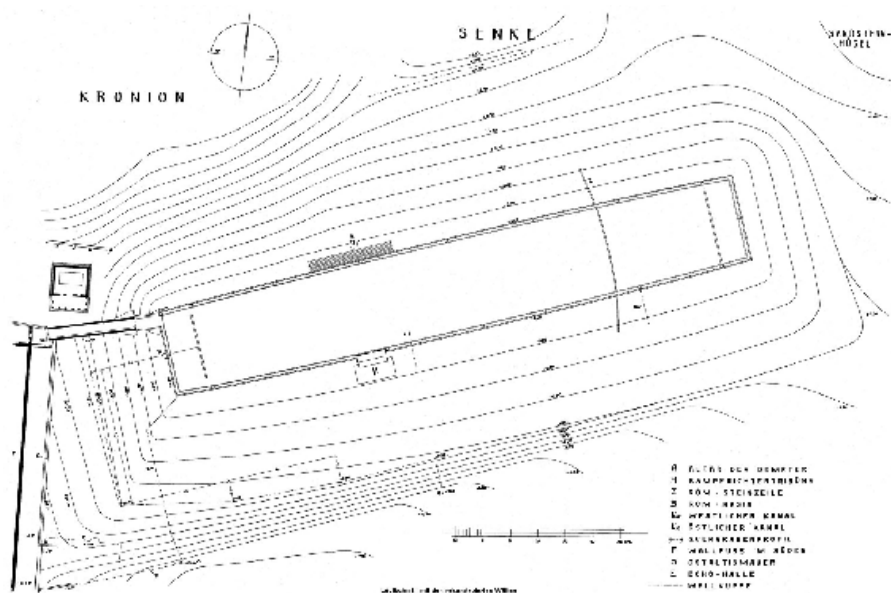


Figure 22.2 Stadium with reconstructed embankments, Olympia, circa 450 BCE.

Source: DAI.

The location of the judges' area (noted by Pausanias (6.20.6)) and the Priestess of Demeter opposite is found approximately one-sixth of the

distance of the stadion from the western starting line. The reason for this location of the judges must have been related to a specific area, a square plethron, or area of 100 square feet, that was demarcated on the track surface, as the place where certain field events took place, likely to have been the wrestling, boxing, pentathlon, and pankration. In this way, the Hellanodikai could have had a good view of all of these events. At Olympia this space, approximately 32 m or 100 feet per side, would have corresponded to the available space within the open courtyard of the palaestra at Olympia. It also probably corresponded with the practice gymnasium that Olympic athletes had trained in at Elis that Pausanias (6.23.1–7) describes as a *xystos* (running track), with high plane trees growing between the tracks and inside the wall. There is a sacred track, as well as a practice track on which the athletes train. Pausanias goes on to say that there is an enclosure called *plethrion* where the Hellanodikai match the wrestlers by age and skill.

The Peloponnesian city Messene offers an example of a spectacular Hellenistic stadium, known from the work of A. G. Blouet in the nineteenth century, and recently excavated. The north closed end of the stadium is enclosed on three sides by a colonnade and a series of stone seats. Rooms opened from the colonnade into a number of rooms similar to those in a gymnasium. The southern half of the stadium does not have seats but slopes without seating facilities. At the far south end of the stadium was found a heroön built into the southern city wall, probably in the first century BCE.

At the Hellenistic city of Pergamon in Asia Minor, the dromos of a stadium was combined with the cavea of a theater on the western slope of the citadel. Constructed in the second century BCE during the reign of Eumenes II (197–159 BCE), this stadium–theater complex was not the only one of its kind in the Greek world, but it is perhaps the most impressive for its size and location. Other examples of this architectural combination are known from Sardis, Tralles, Rhodes, Dodona, and possibly Pessinus. At Pergamon, the terrace of 250 m in length and 25 m in width was situated in front of, and to the west of, the theater cavea (Figure 22.3). Spectators sitting in the cavea of the theater could have watched the athletic events on the terrace, as well as the dramatic or musical events in the orchestra. The scene building of the theater was constructed of wood and was portable, so it could be removed for the running of the footraces. The stadium–theater complex was likely built as a result of the victory of Eumenes II over Prusias, when he established musical and athletic contests in honor of Athena Nikephoros (Kohl 2002). The games were crown games, and the musical contests were considered the equal of the Pythian games at Delphi in prestige, while the athletic contests were supposed to be the equal of the Olympic games. An Ionic temple at the north end of the terrace is likely to have been dedicated to Athena Nikephoros. An earlier example of the combination of theater and stadium complex is to be found in Athens on the Pnyx Hill where, during the period of Lykurgos in the fourth

century BCE, the Panathenaic Stadium and Theater was constructed. The facility combined the enlarged theatrical assembly area with the long adjacent terrace bordered by spectator embankments as a setting for the athletic and musical contests of the Panathenaic games.



Figure 22.3 Acropolis with theater–stadium complex, Pergamon, circa second century BCE.

Source: H.R. Goette.

An extravagant stadium at the ancient city of Aphrodisias in Asia Minor was constructed in the first century CE; it was 270 m long and had 30 rows of stone seats. The spectator capacity of the stadium was approximately 30 000. The track surface measures 238 m in length and is 31 m wide at its narrowest point and 40 m wide at its widest point. The stadium, located at the northern limit of the city, was closed on both ends and, as such, is one of the best-preserved stadia in the ancient world. It was used for Greek athletic contests as well as for Roman spectacles, gladiatorial events, and *venationes*, or hunting games. An inscription from Rhodes mentions the Aphrodisias *Isolympia* in the first century CE, and it is possible that there was an earlier Hellenistic festival on the site.

Architectural features of stadia included a number of common elements. Typically the floor surfaces were composed of smooth clay that had been prepared, rolled, and provided a comfortable surface to run on barefooted. At Nemea, narrow bands of colored clays, red and white, were found imbedded into the track surface, suggesting that colors were utilized in the track surface for the definition of different parts of the track, or for special uses or specific events. The crushed limestone surface associated with the starting line at Corinth (dated to circa 500 BCE) is an exception to this generality. Water

facilities in the form of stone water channels and basins typically line the racecourse floor and would have been used to maintain the track surface. It was important to wet the track as a part of the maintenance of the track surface from time to time. Clay that has been baked in the sun can be brought back to a soft supple surface with the addition of moderate amounts of water. Authors have suggested that these water facilities found at track level in stadia provide drinking water for the athletes and spectators, but water that has circulated around the track surface and settled in basins will not have been attractive to drink. It is more likely that the spectators brought their own drinking water with them. Stadia had some provision made for rainwater run-off to prevent the pooling of water on the surface of the track. One solution to this problem was to provide a pitch to the track so that the center of the racecourse floor was higher than the sides and, in addition, to have a gradual slope to the stadium as a whole so that the open end is lower than the closed end. Some tracks also included storm channels and drains for large amounts of rainwater. All of these hydraulic related features were present in the Hellenistic Stadium at Nemea.

Stone starting lines located at the ends of the dromos limited the length of the track. These starting lines, *balbides* (sing. *balbis*), were typically composed of stone blocks and were characterized by having starting positions, single or parallel starting grooves for the toes of the front left and rear right feet of the starting athlete. Typically there would also be a series of postholes for vertical posts as lane dividers in the starting line that could also be used as turning posts. The characteristics of the starting lines vary somewhat over time, but the basic concept was literally to provide a starting position for each athlete at the start of the footraces. The grooves guaranteed that the athlete would stand stationary and motionless in a very specific place during the start. During the Hellenistic period, an additional apparatus was added to the starting line, known as a *hysplex* (pl. *hyspleges*), a spring loaded mechanism that automatically raised or lowered a bar or a cord to allow the athletes to start the race. From an inscription found at Epidauros (*IG IV² 1.98*), it is known that a hysplex mechanism was being installed there in the mid-third century BCE. Similar devices are known from the stadia of Isthmia, Nemea, and Corinth, and there were other more elaborate examples from other sites, for instance at Epidauros and Rhodes.

Formal entrances to stadia were commonly found as an integral part of the architectural design of the stadium. The earliest such formal entrances were an important aspect of the ancient stadium, and over several centuries these took a variety of different forms. The approach of the athletes to the stadium was of significance in the design of the sanctuary as it appears from the archaeological evidence. From the fifth century BCE onward, there are examples of open-air entrances that channeled the athletes toward the track. Such an example is found at Isthmia, where a ramp 11 m long with low walls

leads from near the southeast corner of the Temple of Poseidon to the northern corner of the curved end of the stadium. Another such open-air corridor, of the fourth century BCE, has been found at the Sanctuary of Zeus at Mt. Lykaion between the Administrative Building and the direction of the stadium and hippodrome. Later, in the Hellenistic period, constructed vaulted entrances were constructed to the stadia at Olympia, Nemea, Delphi, and Epidauros. These were larger and more elaborate constructions; in the case of Olympia the vaulted entrance was 32.10 m long and at Nemea it was 36.35 m. In each instance these vaulted entrances were constructed to create an artificial formal and dramatic entrance for athletes to arrive into the stadium.

By the fourth century BCE, athletic facilities for practice and for competition were so widely known and expected that portable facilities were devised for military expeditions. Xenophon describes two festivals that included athletic contests held by the “10 000” (largely Arcadian mercenaries who worked for Cyrus) during the course of their march (*An.* 1.2.10; 4.8.25–28). The first was a festival in honor of Lykaion Zeus at the beginning of the expedition, and the other towards the end as the army reaches Trapezus on the Black Sea. In both cases, these contests were held on mountainsides where the soldiers were camped and temporary athletic facilities were created for the festivals.

During Alexander’s march to conquer the Persian Empire, two of his generals, Perdikkas and Krateros, carried with them a training facility in the form of hides of animals stitched together that could be set up to create an awning as an indoor training area one stadium in length. In addition, animals carried sand to be spread in the area designated as the palaistra (*Ath.* 12.55).

Alexander founded several new cities in Eastern Bactria, possibly the ancient Alexandria-on-the-Oxus, known today as Ai Khanoum, where excavators discovered a Greek gymnasium, a Greek theater, and Greek houses characteristic of the Seleucid Empire and probably dating to the early third century BCE, although many of the most conspicuous remains date later, to circa 175–145 BCE. The gymnasium included facilities of Vitruvian proportions (see the following section), a large walled courtyard, 99.90 m per side, with interior dimensions of 73.60 m per side. The interior included an exedra on each side, and the north side had six Doric columns, and on the east, west, and south sides two columns. To the south there was an enormous open courtyard 118.50 × 96.50 m, and further to the south a huge swimming pool 58.50 × 53.50 m.

Training and Wrestling: Gymnasia and Palaistrai

Gymnasia and palaistrai could be found in both cities and sanctuaries all over the Greek world. The gymnasium was a facility that often included a palaistra, literally the wrestling school; a xystos, or training track; a bath; and some area

of open space. The three public gymnasia of the city of Athens were well known, the Academy, Lyceum, and Kynosarges. Each of these was built at public expense and located in the suburbs of the city: the Academy to the northwest; the Lyceum to the northeast; and the Kynosarges to the south. The Academy became the school where Plato taught in the fourth century BCE; the Lyceum was known as the school of Aristotle, Plato's pupil; and the Kynosarges was known as the gymnasium where illegitimately born Athenians would go. Private gymnasia, baths, and changing-rooms are also noted in Athens of the later fifth century BCE (*Ath. pol.* 2.10).

Early Archaic or Classical architectural remains of palaestrai and gymnasia are rare. There is little that can be cited until the fourth century BCE. The best dated of these is the gymnasium at Delphi, which can be dated to the years 334–327 BCE based on an inscription (*Corpus d'Inscriptions de Delphes* [CID] 2.79A). The gymnasium architectural complex was situated on two adjacent long terraces, 4 m apart in elevation, the upper one approximately 200 m in length and the lower 60 m, and found between the Sanctuary of Athena Pronaia (Marmaria) and the Castalian Spring ([Figure 22.4](#)). The axis of the two terraces is approximately northeast–southwest. The gymnasium was originally within the city limits of Delphi, and two stairways gave access to the Pleistos ravine and the city below.



Figure 22.4 View of gymnasium, Delphi, fourth century BCE, with Roman additions.

Source: David G. Romano.

The upper terrace (approximately 200 × 34 m) is composed of the xystos (the

covered running track), measuring 185.95×9.02 m, and the parallel *paradromis* (the open-air running track), measuring 172.71×6.00 m. The xystos was covered by a Doric portico, including columns, triglyphs, and metopes. In the Roman period, the columns were replaced with a marble Ionic order when the colonnade was extended by 1.16 m, and the xystos was extended. A ground-level water channel bordered the *paradromis* to the west. At the north end of the upper terrace are the remains of an earlier small temple, probably dedicated to Demeter.

The xystos provided a covered practice dromos on which athletes could train, but since sand was found as the floor surface in the dromos perhaps it may have been used also for activities other than running. No starting-line blocks were found as a part of the xystos. The *paradromis* provided an uncovered practice dromos that was found together with a starting line at both the north and south ends. The starting lines were found *in situ* and feature a single groove for the purchase of the toes of the athlete's right foot. There are also several square post-holes in the starting-line blocks that received the wooden posts to identify the lanes, as well as turning posts. There are places for two starting positions at either end of the *paradromis*, and since the starting positions are staggered, it would have been possible for four runners to start on the *paradromis* at the same time, and if they ran at the same speed they could remain on the track together without causing interference.

The lower terrace takes the form of an irregular trapezoid. The *palaistra* itself, at the southern end of the terrace, is a square structure, 35 m on a side, with a central open court and several rooms that open onto the courtyard. The open-air courtyard is 13.33 m square and included an Ionic colonnade, approximately 3.58 m in height and with probably 8 columns per side. There were water basins and a water channel at ground level inside the peristyle court. Rooms led off of the central court to the west and the north, and we know a good deal about the names and the function of these rooms from an inscription of 247/6 BCE, an account of work to be done in the stadium, gymnasium, and hippodrome at Delphi in preparation for the approaching festival (*CID* 2.139).

The main *palaistra* entrance was a distyle in antis porch facing southwest. On the south side of the internal court was a large recessed room with four columns in antis, and is considered to be the *apodyterion*, or the dressing room. Two rooms on the west side of the courtyard are considered to be the *sphairisterion* and the *konima*, separated by what may have been a small shrine room in honor of Hermes or Herakles. This room faced the internal peristyle by two columns in antis. The *sphairisterion* was the room in which boxers and pankratiasts trained with sand-filled bags. The *konima*, or *konisterion*, was the room in which athletes covered their bodies with fine sand. There was one additional room off of the central peristyle that may have served as a classroom.

To the west of the palaistra, and joined by a corridor from the interior court, is a nearby outdoor area that is characterized as a flat terrace that includes a circular pool with steps, and an area for large washbasins on supports. The circular pool is approximately 10 m in diameter and has five steps leading to the bottom, with a total depth of 1.90 m. The upper terrace retaining wall to the east features 10 basins, grouped into two series of five, with waterspouts probably in the form of bronze lion heads, one for each of the basins, and an additional central spout, which emptied into a canal that leads to the circular pool. Later, a small Roman bath facility was built to the north of the circular pool and area of the water basins.

At the Sanctuary of Zeus at Mt. Lykaion, to the northeast of the hippodrome in the lower sanctuary, a bathing facility has been found in connection with a large reservoir, 17 × 10 m. The building includes a small room that once housed several stone bathing tubs on legs and is likely to date to the fourth century BCE.

At the Sanctuary of Zeus at Nemea, a simple peribolos and bathing facility has been discovered near the *xenon* (guesthouse) that dates to the late fourth century BCE. The east room of the facility is a square room with sides approximately 20 m in length, and the west room is slightly smaller. The east room served as a simple kind of peribolos with four columns towards the center of the room to support the roof and walls around the four sides. There were no further subdivisions of rooms in this facility. The southern third of the west room is dedicated to a bathing area characterized by a rectangular plunge pool in the center approached by steps to the north and two side areas to the east and west where large stone bath tubs on supports were located against the outside walls. The same steps also led down to the areas of the bathing tubs.

The largest and most extravagant excavated gymnasium from the Greek world is in the Hellenistic city of Pergamon. Built largely by Eumenes II on three terraces on the southern slope of the acropolis, epigraphical evidence attests that the terraces were divided according to three age groups, from boys to young men: the Lower Terrace was for the youngest, the *paides*; the Middle Terrace for the *ephebes*; and the Upper Sanctuary for the *neoi*. Each of the terraces was separated by 10–15 m of elevation (see also [Chapter 28](#)). The Lower Gymnasium is an open area, 80 m long and about 25 m wide at the western, wider end; inscriptions of lists of boys who had graduated to become ephebes were found on its north wall. The Middle Gymnasium consisted of two areas, the middle terrace (150 × 36 m) and the north hall, which served as a *xystos*, or covered running track (230 × 10 m). The middle terrace was divided into two areas: the western part constituted an exercise area, and may have included landscaping with trees, while the eastern area included statues, votive reliefs, an altar, and a temple. The marble temple, dedicated to Hermes and Herakles, was tetrastyle prostyle in the Corinthian order, built on a

limestone foundation with an altar to the west along with statues, votive reliefs, and stelai. Names of ephebes were found written on the back wall of the temple. The Upper Gymnasium was constructed on a terrace approximately 200×45 m. The courtyard (74×36 m) was surrounded by stoas on four sides, and a prostyle Ionic Temple of Asklepios was adjacent. The buildings were constructed in the Doric order and in andesite in the Greek period, and changed to the Corinthian order and marble in the Roman period.

Vitruvius (writing in the first century BCE) includes the Greek palaistra and gymnasium in his handbook on architecture, and his description gives us valuable information about the organization and use of the facilities (*De arch.* 5.11.1–4). Vitruvius acknowledges that the building of palaistrai is not common in Italy, but he wishes to explain how the buildings are constructed by the Greeks (*De arch.* 11.1–3). He describes the arrangements in detail and gives directions and dimensions for their construction. He advises orientations for inclement weather, rooms for philosophers and rhetoricians, division of spaces according to active users and passersby, bathing facilities, shade, and spectators.

What Vitruvius describes is somewhat similar to the archaeological remains of the palaistrai at Olympia, Priene, Delos, and Delphi. The palaistra at Olympia is much larger than that at Delphi, measuring on the exterior about 66 m per side and with an interior court of approximately 41 m, creating a large central, open courtyard ([Figure 22.5](#)). The central colonnade was built of the Ionic order, while the in antis openings from the corridor to the outside rooms were built of the Doric order. There were three entrances to the building, two small entries on the south side and a large one to the west. There are 16 rooms that face onto the colonnade. Three of the largest of these rooms, one on the north and two on the east, were characterized as having a stone bench around the interior of the room. Walking or running once around the four sides of the colonnade, in the middle of the corridor, would have been the equivalent of running one Olympic stadion or 192 m. There was also a xystos as a part of a large gymnasium enclosure located immediately to the north of the palaistra. The xystos, a full stadium length long, included stone starting lines at both ends, forming the eastern component of a large rectilinear enclosure of the second century BCE, approximately 212 m long by more than 50 m wide.

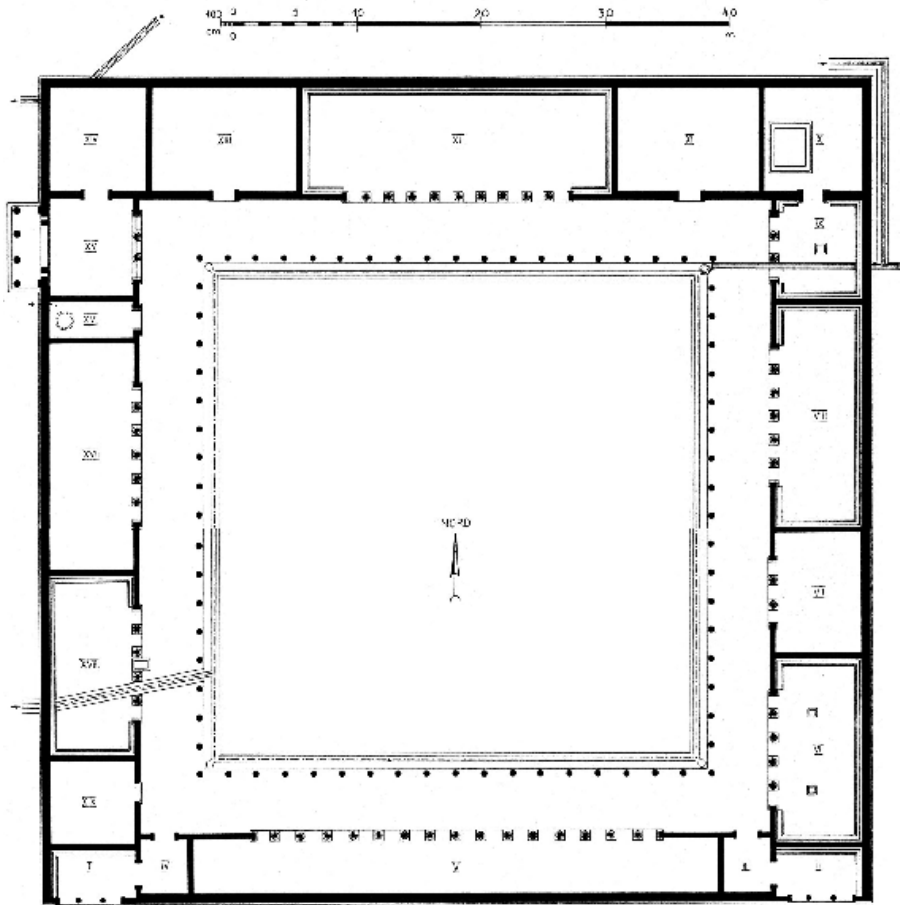


Figure 22.5 Palaistra, Olympia, second century BCE.

Source: DAL.

A Hellenistic inscription from the Greek city of Beroia (*SEG* 27.261) gives us a great deal of information about the workings of a gymnasium and specifically the duties of the gymnasiarch, who was in charge of the running of a gymnasium, as well as the duties of the *paidotribes* who were the trainers.

Equestrian Events: the Hippodrome

Equestrian events were probably the most popular of all of the athletic events from ancient Greece. Possibly the facilities for watching equestrian events accommodated more spectators than were available for watching the track and field events of Greek athletics. We know of the importance of equestrian events from a fourth-century BCE inscription that lists the prizes in the

Panathenaic games (*IG II²* 2311). The victor of the two-horse chariot race in the full-grown class received 140 amphorae filled with olive oil, more than any of the other athletic events.

The hippodrome was a common structure in Greek sanctuaries, as well in Greek cities and towns. We know of many hippodromes from literary and epigraphical evidence, but, even though it is likely to have been one of the largest of all structures built in the Greek world, there is only one example that can be seen today, at the Sanctuary of Zeus at Mt. Lykaion. Visible Greek hippodromes are scarce because they required so little architectural support, and as a result, leave little archaeological trace in the ground. In contrast, many Roman circuses are extant and visible across the Roman Mediterranean world. Since the hippodrome covered so much flat land, in the periods of the year, or years when the hippodrome was not being used, it would be returned to agricultural use. This is attested in inscriptions from Delos and Lebadeia (Humphrey 1986: 12). For some sites, it is known approximately where the hippodrome is located in a city or sanctuary, and in other cases it is not as clear.

There are many references by ancient authors to hippodromes in Olympia, Delphi, Nemea, Isthmia, Thebes, and Athens. The most thorough literary account of a hippodrome is Pausanias's description of Olympia, with details about the starting arrangements (6.20.7–10). He says the hippodrome is located next to the stadium in an area that has been leveled for horse racing and has a starting line shaped like the prow of a ship with the beak pointed towards the racecourse, with a bronze dolphin at the point. He mentions that the competitors draw lots for the assignment of the starting positions and that, instead of an automatic starting device, they use a rope stretched in front of the horses. At each Olympic festival the organizers have a mudbrick altar in the middle of the “prow” that they plaster with ash, and a bronze eagle is situated on the altar with its wings stretched out. At the appropriate time, the eagle flies up and the dolphin falls to the ground and the horses are released in pairs from both sides of the stoa, until all the horses are allowed to start at the point of the beak of the prow. The inventor of this starting system was Kleoitas son of Aristokles. Pausanias also mentions that one side of the hippodrome is longer than the other, and on one side is a feature known as *Taraxippos*, the terror of horses, shaped like a circular altar. Unfortunately the hippodrome at Olympia has yet to be discovered, and, therefore, the details of his description cannot yet be correlated with archaeological evidence.

The archaeological evidence from the Sanctuary of Zeus at Mt. Lykaion gives us more details with respect to the architectural makeup of a hippodrome. The measureable dimensions of the visible hippodrome at Mt. Lykaion are a length of 260 m and a width of 102 m (Figure 22.6). The east long side of the facility is longer than the west long side, the latter having a low terrace bordering the hippodrome at an oblique angle. The orientation of the facility

is slightly west of north in an upland mountain meadow (elevation of 1180 m), which is a part of the lower sanctuary at Mt. Lykaion. The hippodrome is situated between two low hills on the east and west that limit its width, and it once had a stone retaining wall to the east bordering a lower terrace. The northern end is a tongue-like projection of land, although there is no retaining wall visible in the modern day. On the surface of the hippodrome were found the limestone column drums for two stone turning posts, unfluted stone cones tapering from bottom to top. The turning posts with bases would have originally stood 2.94 m tall above the floor of the hippodrome. Although their original locations are not known exactly, it is clear that there were two turning posts on the surface of the hippodrome. Geophysical remote sensing on the upland mountain meadow at the site of the hippodrome has shown that there is no evidence for a barrier running down the spine of the hippodrome, as there was commonly found in the Roman circus. The floor of the hippodrome was a man-made clay surface, and the southern limit of the hippodrome has been identified as a clay or stone barrier limiting the surface of the hippodrome from the hillside to the south. No evidence of starting gates has been found to date.

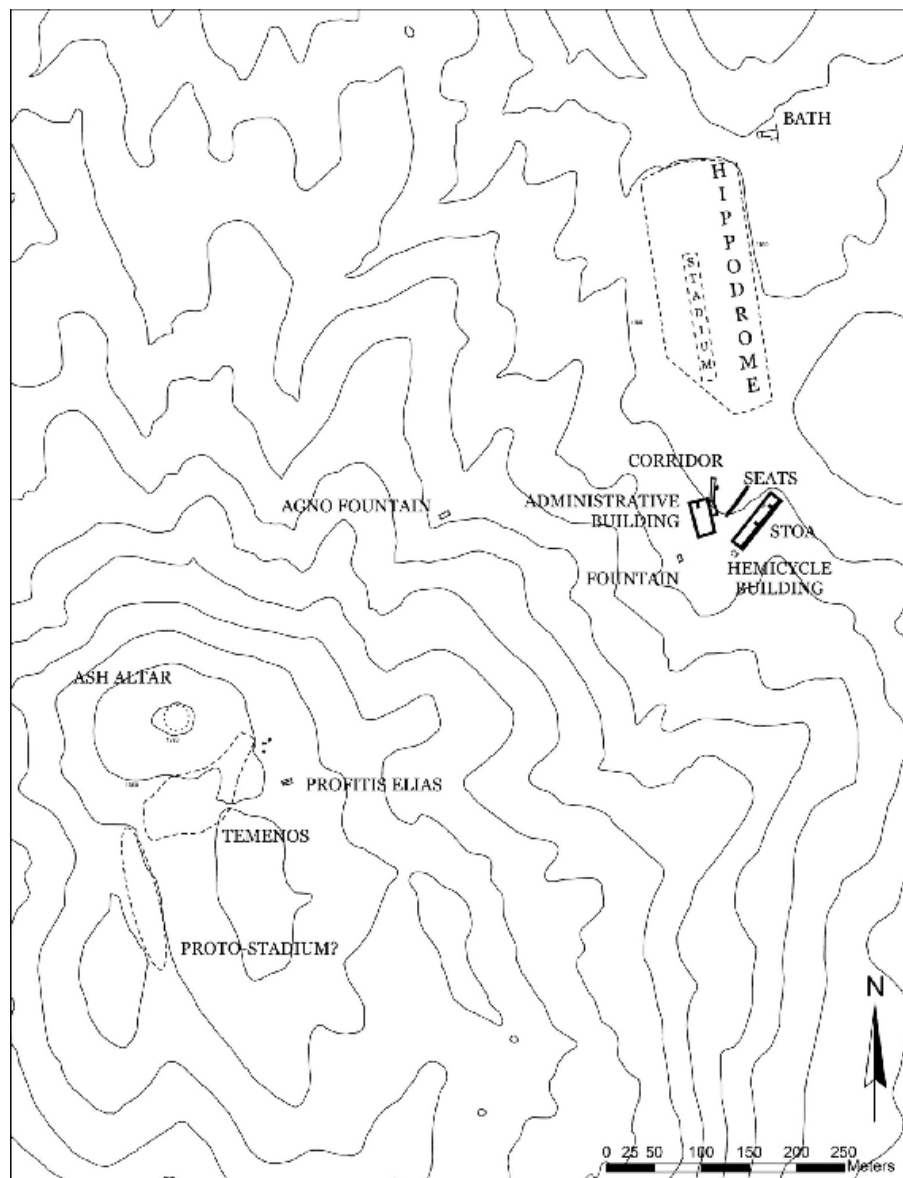


Figure 22.6 Mt. Lykaion, plan of location of stadium, hippodrome, and associated building in mountain meadow, fourth century BCE.

Source: Mt. Lykaion Excavation and Survey Project.

Within the limits of the hippodrome at Mt. Lykaion was also found evidence for the dromos of a stadium, characterized by a series of stone starting-line blocks found in the middle of the hippodrome, suggesting that the axis of the stadium was the same as that of the hippodrome. The length of the dromos of the stadium at Mt. Lykaion is still unknown since its southern end has not yet been discovered.

Conclusions

The importance of athletic events of all sorts, human and equestrian, in Greek life may be appreciated from Greek literary and historical accounts. But excavations over the last century or more have brought to light the actual architectural remains of splendid examples of each type of facility. From the temporary arrangements for funeral games in Homer's epic poetry to the grand complexes at Pergamon and Aphrodisias, footraces, wrestling matches, chariots, and horses all provided spectators with intense entertainment. A common thread throughout the history of Greek athletic architecture is its location in or near sanctuaries, and its use, filled with competitors and spectators as a part of religious festivals. For the Greeks were sure that the gods were just as interested as they were in these exiting contests and honored the victors as more than ordinary mortals.

FURTHER READING

Vitruvius, writing his treatise on architecture (*De architectura*) in the first century BCE, gives us insight into the design of Greek athletic facilities and their use. Winter 2006 includes an excellent summary of Greek athletic architecture from the Hellenistic and the Classical periods; this useful account serves as an overview of the subject that is a good introduction for the reader. Recent excavation reports and archaeological studies from Ai-Khanoum (Veuve 1987; Lecuyot 2007), Aphrodisias (Welch 1998), Athens (Romano 1985; 1996), Corinth (Williams and Russell 1981; Romano 1993), Isthmia (Broneer 1974; Gebhard and Hemans 1992), Mt. Lykaion (Romano and Voyatzis 2015), Nemea (Birge, Kraynak and Miller 1992; Miller 2001), and Pergamon (Romano 1982), as well as the important publications on Olympia (Mallwitz 1972) and Delphi (Jannoray and Ducoux 1953), give detailed information about the description of ancient athletic facilities. Several modern handbooks on Greek athletics include chapters on athletic facilities, and among the best is Harris 1966. Romano 1981 provides a full overview of the stadia of the Peloponnese. The palaestra and the gymnasium are studied most fully by Glass 1967 and 1988, and Delorme 1960 presents a good discussion of the education associated with the training at the gymnasium. For more on Greek athletics, see Kyle 1993, Miller 2004, and Christesen 2007. Romano 2007 explores judging in athletic contests.

REFERENCES

Birge, D.E., L.H. Kraynak, and S.G. Miller. 1992. *Excavations at*

Nemea. Vol. I: Topographical and Architectural Studies: The Sacred Square, The Xenon and The Bath. Berkeley.

Broneer, O. 1974. *Isthmia. Vol. II: Topography and Architecture.* Princeton.

Christesen, P. 2007. "The Transformation of Athletics in Sixth Century Greece." In Schaus and Wenn, eds., 59–68.

Cribb, J. and G. Herrmann, eds. 2007. *After Alexander: Central Asia Before Islam.* Proceedings of the British Academy 133. Oxford.

Delorme, J. 1960. *Gymnasion: Etude sur les monuments consacrés à L'Education en Grèce.* Paris.

Forsén, B. and G.R. Stanton, eds. 1996. *The Pnyx in the History of Athens.* Athens.

Gebhard, E.R. and F.P. Hemans. 1992. "University of Chicago Excavations at Isthmia, 1989." *Hesperia*, 61: 1–70.

Glass, S.L. 1967. "Palaistra and Gymnasia in Greek Architecture." PhD dissertation, University of Pennsylvania.

Glass, S.L. 1988. "The Greek Gymnasium: Some Problems." In Raschke, ed., 155–173.

Harris, H.A. 1966. *Greek Athletes and Athletics.* Indiana.

Humphrey, J. 1986. *Roman Circuses: Arenas for Chariot Racing.* Berkeley.

Jannoray, J. and H. Ducoux. 1953. *Fouilles de Delphes, II: Le Gymnase.* Paris.

Kohl, M. 2002. "Das Nikephorion von Pergamon," *RA*, 2: 227–253.

Kyle, D.G. 1993. *Athletics in Ancient Athens.* Leiden.

Lecuyot, G. 2007. "Ai Khanoum Reconstructed." In Cribb and Herrmann, eds., 155–162.

Mallwitz, A. 1972. *Olympia und seine Bauten.* Munich.

Miller, S.G. 2001. *Excavations at Nemea II: The Early Hellenistic Stadium.* Berkeley.

Miller, S.G. 2004. *Ancient Greek Athletics.* New Haven.

Raschke, W.J., ed. 1988. *The Archaeology of the Olympics.* Wisconsin.

- Romano, D.G. 1981. "The Stadia of the Peloponnesos." PhD dissertation, University of Pennsylvania.
- Romano, D.G. 1982. "The Stadium of Eumenes II at Pergamon." *AJA*, 86: 586–589.
- Romano, D.G. 1985. "The Panathenaic Stadium and Theater of Lykourgos: A Reconstruction of the Facilities on the Pnyx Hill." *AJA*, 89: 441–454.
- Romano, D.G. 1993. *Athletics and Mathematics in Archaic Corinth: The Origins of the Greek Stadion*. Philadelphia.
- Romano, D.G. 1996. "Lykourgos, The Panathenaia and the Great Altar of Athena: Further Thoughts Concerning the Pnyx Hill." In Forsén and Stanton, eds., 71–85.
- Romano, D.G. 2007. "Judges and Judging at the Ancient Olympic Games." In. Schaus and Wenn, eds., 95–113.
- Romano, D.G. and M.E. Voyatzis. 2015. "Mt. Lykaion Excavation and Survey Project. Part 2: The Lower Sanctuary." *Hesperia*, 84 (2): 207–276.
- Rorres, C. and D.G. Romano, 2005. "Finding the Center of a Circular Starting Line in an Ancient Greek Stadium." *Society for Industrial and Applied Mathematics Review*, 39 (4):745–754.
- Schaus, G.P. and S.R. Wenn, eds. 2007. *Onward to the Olympics: Historical Perspectives on the Olympic Games*. Waterloo.
- Valavanis, P. 1999. *Hysplex: The Starting Mechanism in Ancient Stadia*. Berkeley.
- Veuve, S. 1987. *Fouilles d'Ai Khanoum VI: Le Gymnase. Architecture, céramique, sculpture*. MDFAFA 30, Paris.
- Welch, K. 1998. "The Stadium at Aphrodisias." *AJA*, 102: 547–569.
- Williams, C.K. and P. Russell. 1981. "Corinth Excavations of 1980." *Hesperia*, 50: 1–44.
- Winter, F.E. 2006. *Studies in Hellenistic Architecture*. Toronto.

CHAPTER 23

Greek Baths

Sandra K. Lucore

Introduction

The study of Greek public baths (*balaneia*) recently has become the focus of increased scholarly attention, resulting in a dramatic revision of our understanding of their highly developed forms and of the sophistication of Greek bathing culture throughout the Mediterranean especially in the Hellenistic period. The archaeological evidence has grown considerably to provide a more comprehensive and more factual appraisal of design, construction, technology, and use of Greek baths, and a better understanding of the social and cultural role they played as an expression of bathing culture in Greek urban environments. A great deal of work remains to be done, but the appearance of a chapter focused exclusively on Greek baths for the first time in a scholarly volume on Greek architecture marks a major step forward.

Greek baths flourished and reached their highest point of development in the Hellenistic period, thereby providing a combined body of evidence that addresses one of the specific goals of this volume: to give deserved attention to the generally neglected Hellenistic phase of Greek architecture. Current archaeological evidence reveals distinctive Mediterranean-wide regional developments in the thermal architecture of the Hellenistic period. The western Greek baths of Sicily and South Italy, for example, include seminal features that are not found in contemporaneous baths elsewhere in the Greek world but which, not coincidentally, appear in early Roman baths. Thus, Greek baths are inherently important for what they reveal of Greek architectural and social practices, and in the broader context they are a significant source of influence on the architectural form that more than any other would come to characterize Roman culture. Because Greek baths were not restricted by traditional rules that generally applied to the design and construction of temples and other forms of civic architecture, they provided the locus for unprecedented experimentation and innovation and thereby make a crucial contribution to our understanding of ancient architecture more generally. This chapter focuses on the Greek public bath, the *balaneion*, to the exclusion of other forms of bathing, and it considers the broad geographical (throughout the Mediterranean) and chronological (from the fifth century BCE to the second century CE) distribution of public baths that provides a large and coherent body of evidence allowing for a more detailed and

comprehensive assessment of the architecture and customs of bathing in the Greek world.

History of the Study of Greek Baths

Balaneutiké, published in 1962 by René Ginouvès, was the first comprehensive study of Greek baths; in it the author brought together all of the available archaeological, art historical, and especially textual evidence to arrive at a synthesis that laid the foundations of the discipline. *Balaneutiké* has not been surpassed, but recent excavations, reexamination of previously known material, and new approaches to traditional sources combined have built on Ginouvès' study. The greatest advances have been made in the archaeological evidence, which today includes more than 75 known examples of Greek public baths, in contrast to the 23 Ginouvès had available on which to base his assessment. Greek baths can now be more realistically evaluated on their own terms, and while it is true that "architecture, technology, and decoration are the determining components of Roman baths," this assessment could just as well apply to the most fully developed Greek baths (Manderscheid 2000: 534).

Other overviews have appeared since *Balaneutikè*, all of which have limitations, either because they do not include all of the evidence that was available at the time, or because they are unpublished and therefore not accessible to researchers (see Lucore and Trümper 2013: 1–10). From the mid-1980s some of the most illuminating discussions of Greek baths came from scholars investigating Roman baths and possible influences on their origins from the earlier Greek bathing complexes of Sicily and South Italy (Nielsen 1985 and 1990: 6–36; DeLaine 1989; Yegül 1992: 6–29; Broise 1994; Fagan 2001; Thébèrt 2003: 45–74; Winter 2006: 131–134). The subject has grown in importance, and only for the first time recently was it a major focus of discussion, with the relevant Greek evidence central to that discussion, in a conference on Roman baths of the Republican period (Coarelli, Battaglini, and Tsiolis forthcoming; Lucore forthcoming).

Since these more recent studies there has been a spate of scholarly interest in Greek baths, and the increased attention to the archaeology and to the complexity of the issues concerned with their study is reflected in the broader boundaries of the discipline. One of the most striking results of this research is the clear picture established of the widespread distribution of Greek baths throughout the Mediterranean by the Hellenistic period. Egypt, for example, currently accounts for roughly half of all known Greek or Greek-style baths, and their popularity continued even into the Roman period after the

introduction of Roman baths (Fournet and Redon 2009; Redon 2012). As this evidence is better understood, it provides intriguing insights into important questions of cultural interaction and assimilation in Ptolemaic Egypt.

Images of bathing on Greek vases traditionally have constituted a major source for the study of Greek baths, especially bathing customs. As long as these images were believed to represent “everyday life,” they could be taken at face value as indicators of real places and practices, a condition of especial significance regarding images of women bathing. Recently, however, this approach to understanding images on vases as reflecting “reality” has been fundamentally questioned (Ferrari 2002; Stähli 2009); and in the case of scenes of women bathing, some scholars have determined that they have nothing to do with real baths and bathing at all (Stähli 2013). Although such images might not be informative of actual facilities and practices, further research could determine what these new approaches to understanding the visual evidence might reveal of other aspects of bathing culture.

Women bathing in public are, however, located in textual sources, which provide information on other aspects of Greek baths, from finances and administration, to function and use, and ultimately to their social significance (Fournet and Redon 2009: 115–117; Redon 2011). On the important question of ownership and patronage, a survey of the evidence reveals that until the Hellenistic period, public baths were primarily privately owned for personal profit. Later in the Hellenistic period, it is possible to discuss public ownership of *balaneia*, although the evidence is by no means conclusive (Trümper 2013). The ancient sources, and modern compilations and commentaries, are fewer for Greek baths and bathing customs than for their Roman equivalents. Yet, just as more careful attention to the full range of the archaeological evidence for Greek baths has resulted in a more accurate understanding of the design, construction, and features of Greek bathing establishments, more careful attention to the textual sources, and to the full range of questions they can address, can produce equally informative results.

Early Greek Baths

The earliest archaeological evidence for Greek baths is found in Greece and dates to the first half of the fifth century BCE. The Dipylon Baths in Athens are the earliest of the four bathing facilities that are archaeologically attested in the city (cat. no. 11; for the other three, see cat. nos. 12–14; these and all following catalogue numbers refer to the Catalog in Lucore and Trümper 2013). Athens is exceptional for the number of baths it accommodated (two others are known from textual sources), and it is also exceptional for the

extent of the literary and epigraphic sources that help to fill out the picture of bathing in the city (Trümper 2013: 37–40). All of this suggests that Athens was the innovator in the appearance of the *balaneion*, as it was for so much else in the fifth century BCE. All but one of the Athenian baths were located outside the city walls and away from the center of life, providing the archaeological evidence that coincides with the questionable early reputation of baths themselves. Aristophanes targets specifically the warm water bathing available in public baths as detrimental to the character of male citizens, in contrast to the simple cold-water ablutions that were the standard regimen of the gymnasium. He furthermore condemns the idle pleasures of public baths that seduced young men away from the physical rigors of the *palaistra* (Ar. *Nub.* 1046, 1053–1054).

Although this evidence is limited to Athens, it is reasonable to believe that initially there would have been some general resistance to the more comfortable bathing amenities and facilities provided by the *balaneion*, given Greek society's emphasis on the discipline of instilling masculine virtues. Gradual acceptance accounts for the modest number of public baths known throughout the Greek world, datable to the fifth and fourth centuries BCE, compared to the proliferation of examples in the Hellenistic period, a time when Greek societies increasingly refined their urban environments to reflect developing standards of comfort and individual well-being. In the Hellenistic period, in contrast to the earlier evidence from Athens, Greek baths were normally intra-urban constructions, often situated in very prominent and highly accessible settings, not simply a sign of their acceptance but more significantly an indication of their central importance to urban life.

Modern scholarship agrees that Greek public baths are defined by the presence of one or more rooms in the building that are usually, but not always, circular in plan (*tholos*). These spaces were equipped with individual hip-bathtubs, either of masonry construction, or “portable” and made of terracotta, sometimes stone, in which patrons sat while hot or cold water was poured over them to provide a seated shower-like bath. The Dipylon Baths, and the other known establishments in Athens, are incompletely excavated or only partially preserved, but, while the full extent of their plan and features is unknown, the defining *tholos* with hip-bathtubs is clearly identifiable. For the Dipylon Baths, water was apparently supplied by a nearby well and was heated over a furnace adjacent to the *tholos*, from where it was transported manually to the bathing room. Portable braziers probably provided heat in the room during cold weather. A system of drains controlled the evacuation of used water from the interior to the exterior of the building. Additional rooms include the service area of the furnace and an adjacent space possibly intended for patrons to change in or to await their turn for a bath. From their first appearance, then, Greek baths include all the features necessary to provide a simple form of cleansing bathing in a type of space (round) most suitable to

controlling the warm and moist environment.

Two additional bathing establishments in Athens, the Baths outside the Piraeus Gate (cat. no. 12) and the Baths of Diochares (cat. no. 13) were constructed possibly in the fourth century BCE, but, because of their incomplete state of excavation, they do not provide sufficient evidence to determine how baths in Athens developed after their first appearance. The larger size of the tholos bathing spaces of these two buildings does reflect, however, a growth in popularity and use, and decorated floors attest to a concern for aesthetic embellishment.

Until later baths of the Hellenistic period were designed to include innovative, alternative forms of relaxing bathing, plans of public baths were conceived around the principal feature of the room with hip-bathtubs. Some complexes included two *tholoi* for tub bathing, a feature generally explained as indication of the separation of different user groups, most notably women and men. The majority of such examples are found in Ptolemaic Egypt, and therefore might reflect more consistent local bathing customs of segregation. Alternatively, the presence of two *tholoi* in the same complex could be explained as a means of doubling the available bathing space. The rooms surrounding the bathing spaces functioned as entrance/reception areas, waiting/changing spaces, and service areas related to the function and maintenance of the facilities.

Comparison of the Athenian plans and those of other Classical period bathing complexes, for example at Olympia (cat. no. 23), Piraeus/Serangeion (cat. no. 28), Hephaistia (cat. no. 21), Kolophon (cat. no. 30), and Marseille (cat. no. 4), shows that, although the cleansing form of bathing itself was uniform, designs and layouts varied, and individual Greek communities adapted the designs to suit their particular needs.

The baths at Olympia (cat. nos. 23–25) are frequently cited in discussions of ancient baths because of the long history of bathing at the sanctuary. In a sequence of renovations undertaken after the initial construction around 400 BCE of the Older Sitz-Bath (cat. no. 23), the facilities were developed to accommodate greater numbers of bathers and to provide more extensive heating systems for both water and additional heated bathing forms (Younger Sitz-Bath (cat. no. 24); Late Hellenistic Baths (cat. no. 25)), thereby reflecting the general trend of renovating and updating facilities in public baths. Very few sanctuaries provided independent bathing establishments, and it is not surprising that the first to do so was the preeminent Panhellenic sanctuary of the Greek world. Baths located in or in proximity to sanctuaries generally have been understood as facilities used for cultic or ritual purposes, but there is no evidence to confirm this identification (Ginouvès 1962: 230–428; Trümper 2013: 52–62). The shared features of these baths and those of *balaneia* in urban environments indicate instead that they were provided as amenities for visitors to sanctuaries who increasingly would have been accustomed to such luxuries at home. At Olympia, where the crowds of

Panhellenic visitors were numerous, use of the baths was probably limited to magistrates and elite visitors, and possibly athletes too, who could have enjoyed an alternative to their athletic facilities in Elis.

After first appearing in Athens, and although initially not numerous, public baths gradually spread outside Athens: to Piraeus, Corinth (cat. no. 15), and Ambracia (cat. no. 10); and to other areas of the Greek world, from Marseille in the northwest to the Ionian city of Kolophon. Greek public baths spread as well to North Africa, especially, later, to Egypt. Early plans vary, and except for the custom itself of taking a bath in public in a dedicated space equipped with hip-bathtubs for individual cleansing bathing, no defining Athenian influence is discernible. Thermal architecture was not bound by the same rules as civic and religious buildings, thus providing designers and builders with the freedom to adapt and develop baths according to local needs, taste, and resources. Because bathing as a profane activity and the architecture that accommodated the practice were unrestrained by tradition, Greek baths furthermore provided the rationale for remarkable innovations in design, construction, and technology that characterize Greek public baths at the high point of their development (Lucore 2016, forthcoming). The invention and development of more complex heating systems constituted the technology most essential to promoting the rise of luxury bathing, and the combined evidence is interesting for what it reveals of the different approaches that Greeks in various areas of the Mediterranean took to this new aspect of their bathing experience. Greek baths in their entirety were anything but homogeneous.

Western Greek Baths

By the late fourth century BCE, the *balaneion* had made its way to Greek Sicily and South Italy (Lucore 2013a). When Gela was refounded by Timoleon in 338 BCE, the city was repopulated and developed to include a new habitation zone where a bathing complex (cat. no. 2), the earliest known in Sicily, was constructed before the end of the century as an amenity for the citizens of the new city. In 2012, a second bathing complex was discovered in the same habitation area of Gela, and it is provisionally dated to the late fourth–early third century BCE. Awaiting complete excavation and publication, preliminary reports (*La Sicilia*, June 23, 2013) suggest it is similar to the previously discovered baths at Gela and includes features that also link this new complex to mainland traditions. Hence it appears that the *balaneion* was imported to Sicily, along with the population of new citizens from the Greek mainland. The original plan of the Gela bath included one rectangular room for individual hip-bathtub cleansing bathing, instead of the standard *tholos*. A second bathing room, installed in a later renovation,

followed the *tholos* design, which was then used exclusively in all subsequent Sicilian baths. The original configuration was apparently influenced by the earlier bathing establishment at Olympia, the sanctuary very familiar to Sicilian Greeks with their longstanding tradition of participation in the Panhellenic games. The Older Sitz-Bath at Olympia was equipped with only one rectangular room for bathing, and in both complexes the hip-bathtubs were of similar masonry construction and not the portable terracotta tubs that were the standard in *tholoi* in all other Sicilian baths.

Greek baths in Sicily constitute a crucial body of evidence, with secure dates and well-preserved remains that allow for a vivid reconstruction of the innovative and experimental nature of the *balaneion* as it was distinctly developed in the Greek West. Even in its incompletely excavated state, the bath complex at Gela is revealing and important for providing the earliest furnace/hypocaust system known from Greek baths anywhere in the Mediterranean, thanks to the *terminus post quem* of 282 BCE, the date of the destruction of the city. Greek hypocaust/furnace systems are essentially large pits cut into the ground, the walls of which are then lined with small pieces of tile. In this chapter, “furnace” is the term used to refer to the large heating installations, and “hypocaust” is used for the small heating channels constructed below the communal immersion pools in Greek baths. This new and advanced heating system was installed when the original complex was renovated to include the second bathing room, clearly to provide greater amounts of hot water for the expanded facilities. The unusual plan of the furnace at Gela, along with other evidence of underfloor heating channels, suggests that additional heated spaces or heated forms of bathing might have been part of the original plan. Without further research on the building, a reliable reconstruction of the heating system and related features is not possible; yet what the evidence does make clear is that as soon as Sicilian Greeks were introduced to public bathing facilities, they modified the plan to include a more extensive heating system that revolutionized the baths themselves to accommodate desired new forms of bathing.

The other known Sicilian Greek bathing complexes are found at Syracuse (cat. no.8), Megara Hyblaia (cat. no. 5), and Morgantina (Figure 23.1; cat. nos. 6, 7); all are dated to around the middle of the third century BCE, and close similarities of their plans and features indicate a common source, most likely Syracuse (Lucore 2009; 2013a; 2013b; forthcoming).

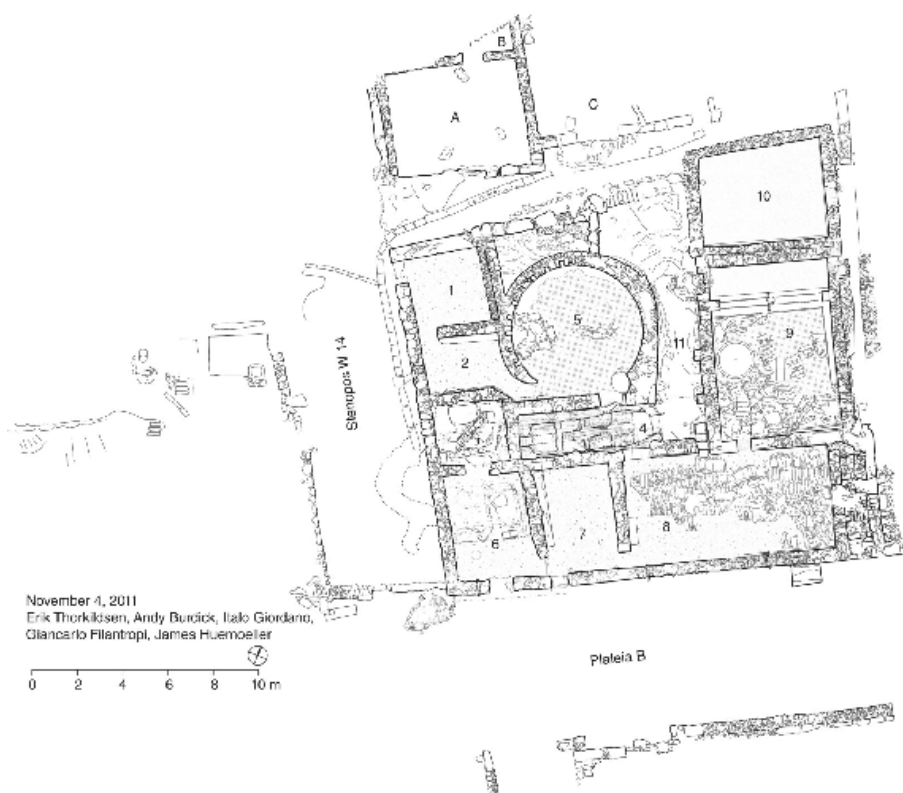


Figure 23.1 North Baths, Morgantina, plan.

Source: E. Thorkildsen of the American Excavations at Morgantina.

The best preserved of the Sicilian baths are the North Baths at Morgantina, and they provide a vivid picture of the central importance placed on bathing and the architecture of bathing in the kingdom of Syracuse under Hieron II. As the best preserved, technologically most innovative, and most extensively decorated public bath known throughout the Greek world, the North Baths provide the most complete picture of the full development of Greek baths. The 11-room complex features (as numbered in [Figure 23.1](#)) reception (6) and waiting and changing areas (*apodyteria*: 1, 2, 7), in addition to the relaxing (8) and bathing spaces themselves (5, 9), and the associated service areas: a well (3), the central furnace (4), a large reservoir (10), and the service corridor (11). The plan includes the characteristic *tholos* (5), originally equipped with 15–17 portable terracotta hip-bathtubs for simple cleansing bathing.

Unprecedented, however, is the division of the building into two discrete and clearly defined zones: one for hygienic bathing and the other to accommodate a revolutionary new form of leisure bathing in a communal hot-water immersion pool (north end room 9). Each bathing area had a separate entrance from the streets (from *Stenopos* West 14 into room 1; from *Plateia* B into room 7, possibly also room 6). The two zones are situated on either side of a

large furnace that heated the water for use in the tholos and that would have provided ambient heat to surrounding spaces. The firing chamber (*praeefurnium*) of the furnace is located at the east end. A series of platforms supported the water vessels of the boiler system, while the central channel between the platforms helped to draw hot air more efficiently towards the flue at the west end. The construction of the top of the furnace would have prevented access from room 5 to room 8, and vice versa, effectively dividing the building into two separate zones and thereby allowing the possibility of restricting bathing, and segregating bathers according to gender, social class, or other criteria.

The traditional Greek form of bathing in individual hip-bathtubs was certainly a communal experience, considering the intimate side-by-side spacing of the tubs and the normally modest size of the bathing rooms. But the intimacy of soaking in the same pool of warm water with a small group of patrons, and within a large and well-appointed space, provided a very different experience, with the emphasis on relaxing and socializing in a leisurely manner, and not simply on washing oneself. The first appearance in Sicilian Greek baths of a relaxing form of bathing dependent on ample supplies of hot water could have been influenced by already established customs of frequenting thermal springs, a natural resource that was (and still is) abundant in Sicily, including in the eastern part of the island dominated by Mt. Etna. The appearance of this novel feature, however, is more accurately explained as a conscious decision at this time to commit considerable economic, design, and technological resources to further develop and distinctly enhance bathing culture as a sophisticated element of a well-appointed city.

Water for the immersion pool was first heated over the furnace before being transported to fill the pool. A small hypocaust channel runs under the floor of the pool, from the firing chamber at the west end to the flue at the east, which helped to keep the water warm, but it was the installation of an early form of *testudo* that ensured a steady comfortable temperature of the water throughout the working day (Figure 23.2). The *testudo*, mentioned by Vitruvius (*De arch.* 5.10.1), is made of bronze and consists of a half cylinder set on a pan, closed at one end and open at the end that is fitted against an arched opening in the wall of the immersion pool to allow the *testudo* to fill with water from the pool. Lead was used as a seal between the bronze and the masonry. The *testudo* is placed over the open fire of the hearth on the opposite side of the pool wall, and by a process of convection the heated water is circulated back into the pool, thereby maintaining a steady temperature of the water. This is the earliest known example of this ingenious device, which, until the discovery at Morgantina, was known only in Roman baths. Water throughout the North Baths was controlled by an extensive system of supply and drainage within the complex, which connected to a central drainage system at the exterior of the building that appears to have been designed to recycle used

water for use in nearby fields and groves. The *opus signinum* floors of all the bathing rooms in the building provided a water resistant surface appropriate for the wet environment.



Figure 23.2 North Baths, Morgantina, view from east to room 9 and *tholos* (5); room 9 immersion pool at right, with opening in west wall of pool that resulted when metal *testudo* was removed in antiquity; opening filled with ancient debris.

Source: Sandra K. Lucore.

Most Greek baths preserve little evidence of their original decorative programs, except for floors in many cases, but in this instance, too, the North Baths are exceptional. The *opus signinum* floors of all public spaces are decorated and hierarchically differentiated with *tesserae* inlay, including *opus tessellatum*. Walls are painted, extensive moldings are applied, and painted figural friezes give added emphasis to the two main bathing rooms themselves (Rooms 5, 9) (Figure 23.3).

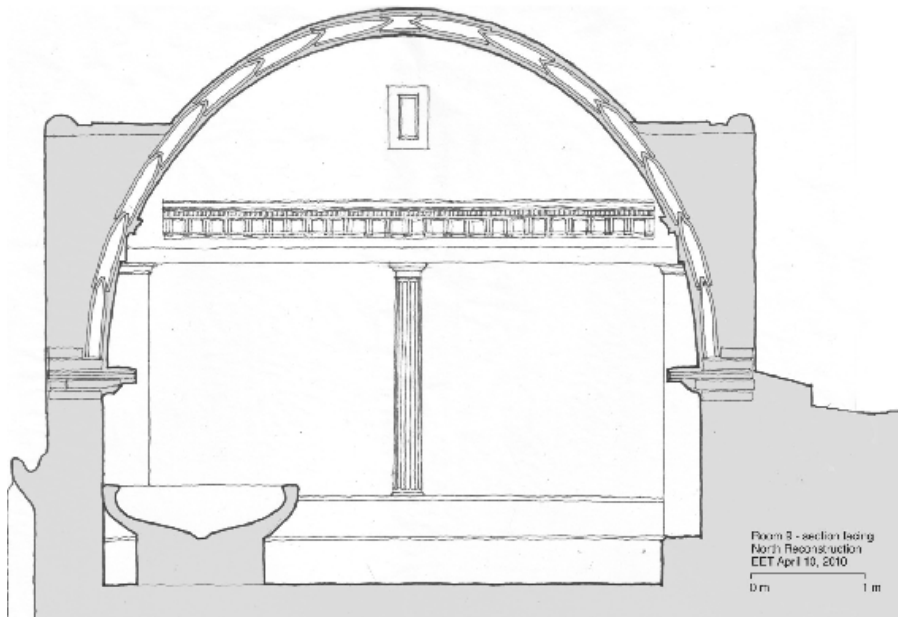


Figure 23.3 North Baths, Morgantina, elevation of north end of room 9, with Doric column supporting entablature with mixed Doric and Ionic frieze over the immersion pool.

Source: E. Thorkildsen.

Most remarkable, however, is the dome over the *tholos* (Figure 23.1: 5) and the two barrel vaulted rooms (Figure 23.1: 8, 9), constructed of interconnecting hollow terracotta tubes (Figure 23.3). These are among the earliest existing evidence of above-ground vaulting, a technology that current evidence indicates was invented for use in baths. The unprecedented appearance of this bold and original form of construction was very possibly influenced by the work of Archimedes, and it was certainly a product of the lively culture of science and technology that characterized Syracuse under Hieron II in the third century BCE (Lucore 2009, 2013a, 2013b, and forthcoming; Napolitani and Saito 2013). Evidence exists to indicate the likely presence of domes and vaults in the other known baths of Hieron's kingdom (e.g., Syracuse and Megara Hyblaia), and the advent of this ingenious form of roofing alone calls for a new chapter in the history of Greek architecture.

Bathing complexes similar to those in Sicily appear in South Italy also in the third century BCE, at Caulonia (cat. no. 1), Locri (cat. no. 3), and Velia (cat. no. 9), and together these establishments, with their emphasis on heating systems and communal leisure bathing in heated pools, constitute a significant source of influence on the earliest Roman baths (e.g., Fregellae, see Tsiolis 2013).

Greek Baths in Egypt

In the wake of Alexander and the settling of the Ptolemies in Egypt, Greek public baths as well were readily established in Alexandria and in towns in the Delta and Fayum. Recent excavations and research have revealed that about half of all known Greek or Greek-style baths are found in Egypt, a remarkable circumstance accounted for by the exceptional longevity of this type of bath as late as into the Roman imperial period, when Greek style baths existed alongside Roman establishments. Dating is a critical problem for the study of Greek baths in general, and even more so for baths in Egypt, although recent excavations and research are providing more reliable chronologies. It is clear, nonetheless, that once introduced to Egypt, the traditional Greek bath with its emphasis on cleansing bathing was modified and adapted to suit local conditions.

The baths at Schedia (cat. no. 63), located southeast of Alexandria, were built in the second half of the third century BCE (Bergmann and Heinzelmann 2009). In the first phase, the building consisted of a waiting/changing room with two benches and two *tholoi* of equal size, each equipped with 15 constructed hip-bathtubs, that were located on opposite sides of a central corridor. The use of corridors as the central organizing element of the bathing facilities is a defining characteristic of Egyptian Greek baths (Trümper 2009; Lucore and Trümper 2013: 269–334). The absence of evidence of a furnace or boiler indicates that water for bathing was heated on portable braziers. Although a few examples of double *tholoi* baths exist elsewhere in the Mediterranean, this plan is particularly popular in Egypt. Papyri from the third century BCE onward confirm the existence of separate *tholoi* for women and men (Lukaszewicz 1986: 66ff.; Meyer 1992: 51–60); and the location of the entrances to the *tholoi* at Schedia, which prevented direct access from one to the other, is evidence of this division. In subsequent remodeling two individual immersion bathtubs were installed in a room added on to the original building, evidence that Egypt too followed the trend in the Hellenistic period toward greater emphasis on leisure bathing.

Yet instead of relaxing together in heated communal immersion pools, as was the custom in the Greek West, bathers in Egypt preferred to relax separately, even if in close proximity to other bathers. The immersion tubs were not equipped with a heating system, and thus hot water for relaxation bathing was supplied manually from nearby braziers. This characteristic rejection of communal bathing in Egypt has been attributed to an Egyptian culture of “excessive” purification, as recorded by Herodotus, and a related desire to avoid unwholesome direct contact with others (Fournet and Redon 2009:

127). It is also evidence of the remarkable degree to which the integration of Greek baths into the local culture responded to local customs from the outset.

Until recently, baths in Egypt were further distinguished by the absence of developed heating systems. Recently excavated evidence from the bathing complex at Taposiris Magna (Figure 23.4; cat. no. 65) has brought about a reassessment, however, which defines a recognizable Egyptian system that was developed and became popular in the second century BCE (Fournet and Redon 2013).

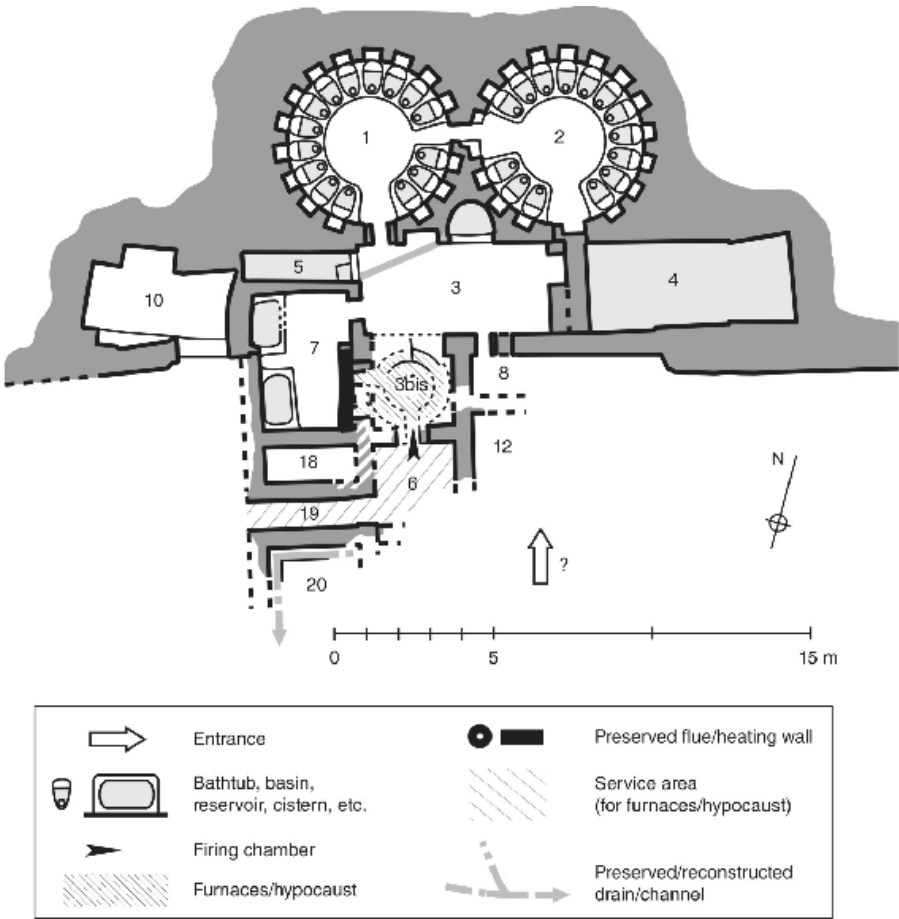


Figure 23.4 Baths, Taposiris Magna, plan.

Source: T. Fournet.

The first phase of the baths at Taposiris Magna is dated to sometime before the middle of the second century BCE. The building is largely cut into the bedrock, with additional rooms constructed in the adjacent area to the south. The plan, as shown in Figure 23.4, is of the standard type and similar to that of the Schedia baths, with two *tholoi* (1, 2) of equal size, each with 16

constructed hip-bathtubs, and each with a separate entrance off a central corridor (3). This same hall gives access to a room (7) with two individual immersion tubs for relaxing bathing, apparently original features and not later additions, as at Schedia.

Sometime at the end of the second to the beginning of the first century BCE, a renovation of the complex took place characterized by the installation of an extensive heating system (3bis in [Figure 23.4](#)). This provided radiant heat for surrounding spaces, hot water for bathing, and, unique to Greek baths in Egypt, a heated wall in the room with the immersion tubs that ensured a higher level of comfort for the leisure bathing the room was designed for. The wall heating system is described by the excavators as “proto-tubuli,” and it is thus related to similar wall heating devices that were developed in Roman contexts in the western Mediterranean in the second and first centuries BCE. Western Greek baths, with their large furnaces and their hypocaust systems for heating collective hot water pools, are recognized for the influence these features (among others) had on early Roman baths. Now, with the discovery of a distinctly Egyptian form of heating, including heated wall surfaces, Greek baths in Egypt contribute as well to this much debated topic of the influences involved in the transition from Greek to early Roman baths.

Later Hellenistic Baths in Greece

Bathing establishments in the eastern Mediterranean of the second century BCE have been identified as a discrete group because of two new forms of leisure bathing that were adapted to the traditional plan: individual immersion bathtubs and a round sweat bath, both heated by hypocaust channels below (Trümper 2009: 145–149). The well-preserved bathing complex in the Sanctuary of Asklepios at Gortys ([Figure 23.5](#); cat. no. 20) provides the most coherent example of this eastern Mediterranean type (Ginouvé 1959). The open plan allowed patrons to circulate freely within the building and to access the bathing facilities in no prescribed order. Cleansing bathing is here clearly deemphasized, with only nine hip-bathtubs in the *tholos* (G). Underfloor hypocaust channels and heating rings run throughout the center of the building providing the source of hot water for the individual immersion bathtubs (D) and the necessary heat for the round sweat bath (E). Part of the central room C was heated by the same system, thereby adding significantly to the comfort of this large space clearly meant for relaxation and other, simpler forms of bathing at the basins installed in the room. The heating channel ends below the apse of room B, a large space for patrons to wait, change, or simply relax before accessing the baths themselves. Considering the effort made at Gortys to provide hot water for cleansing and soaking, hot air for sweating, and generally ambient heat for increased comfort, the absence of communal

heated pools is striking, clear indication that this form of communal bathing did not suit local practices.

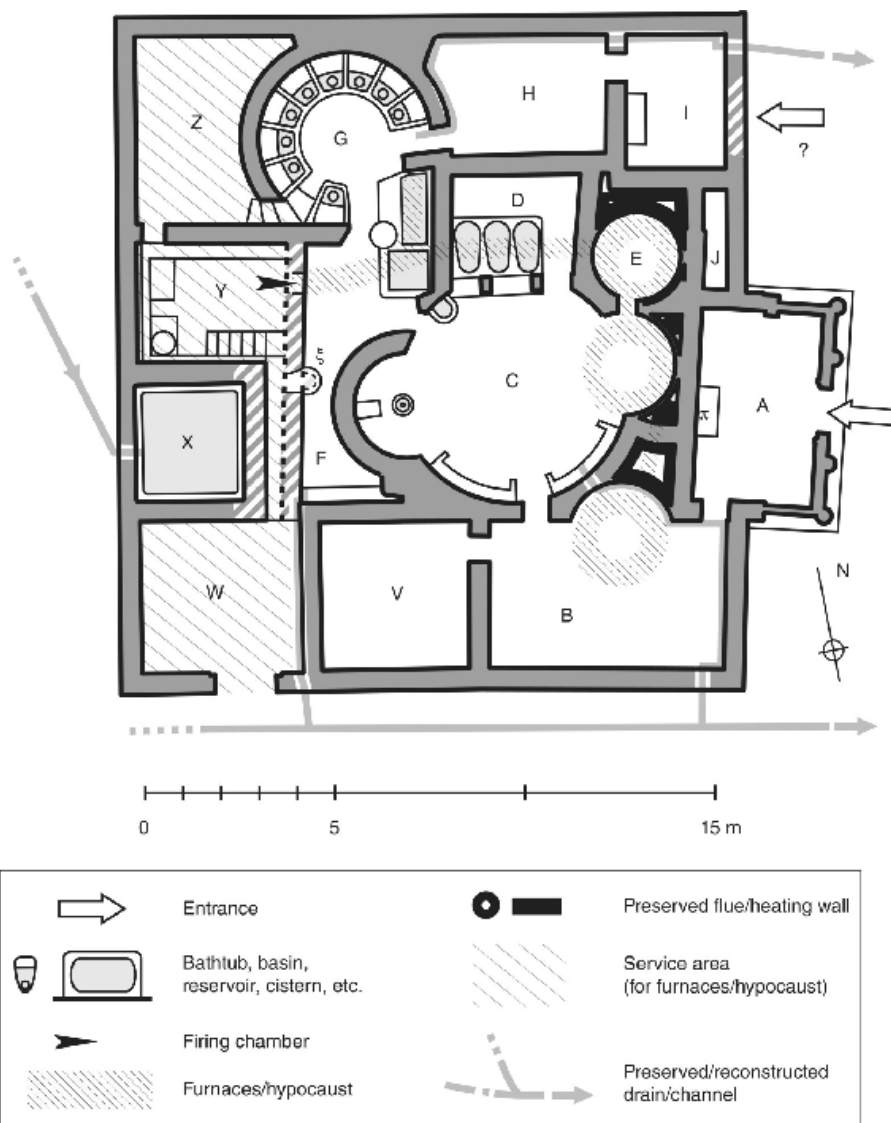


Figure 23.5 Baths, Sanctuary of Asklepios, Gortys. plan.

Source: T. Fournet, adapted from Ginouvès 1959.

Although less well-known than the building at Gortys, other roughly contemporaneous baths in Greece can be identified as sharing similar features. The second-century BCE Late Hellenistic Baths at Olympia (cat. no. 25) included a *tholos* with 13 hip-bathtubs and a leisure bathing area with two individual immersion bathtubs and a round sweat bath, both heated by a hypocaust channel below, as at Gortys. Because of the incomplete state of the visible remains, it is impossible to know what other spaces and amenities

made up the original complex, including the possibility of more heated rooms. In a subsequent renovation of the building in the following century, the original heating system and the baths it heated apparently went out of use. At the same time, a new underfloor heating system was installed, but too little remains to indicate what form this took and what type of bathing spaces it might have heated. At Gortys, the baths continued in use until the first century CE, with modifications that did not affect the major bathing facilities. The suppression of the two defining relaxing bathing forms at Olympia in the previous century might indicate that there was less rather than more uniformity in the design and features of late Hellenistic baths in Greece, although with only partial remains by which to judge the question remains open.

Other less well-known bath buildings of roughly the same period provide further evidence of this regional type (Trümper 2009: 145–149). Many of these examples are incompletely, or now not at all, preserved, or are subject to other conditions that make reliable reconstructions difficult, if not impossible. The accepted reconstruction of the double *tholoi* bathing complex at Eretria (cat. no. 19), for example, includes individual immersion bathtubs and a round sweat bath, but the date of construction is disputed, whether fourth century BCE or second century BCE (Lucore and Trümper 2013: 289).

A simplified variation on this eastern Mediterranean type of bath is seen in the complex at Oiniadai (cat. no. 22), where a remodeling that took place probably in the second century BCE resulted in the conversion of the smaller *tholos* into an unheated (except by portable braziers) sweat bath, and in the installation of a small pool for individual or collective soaking in cold water. Further variations on this type of plan are found in a recently discovered bath at Pella (cat. no. 26), where a second-century BCE refurbishing updated the traditional form of bathing in hip-bathtubs with the addition of a sweat bath, a possible large cold-water immersion pool, and a hypocaust system that heated a possible collective immersion pool and two adjacent spaces. At this point, the variations begin to blur the definition of the *balaneion* as it has been identified in this part of the Greek world. Yet, undoubtedly, future research and discoveries will help to clarify these later developments in Greek baths. What is now very clear, however, is that Greek baths flourished throughout the Mediterranean, especially in the Hellenistic period, and, not surprisingly, in response to the particular cultural conditions and practices that characterized the different regions of the Greek world. Further excavation, research, and studies that address the full complexity of the phenomenon of Greek baths will result in a more comprehensive reassessment of Greek architecture itself, especially in the Hellenistic period, and of the social developments behind the rise in bathing culture in the varied societies served by these remarkable establishments.

FURTHER READING

The study of Greek baths begins with Ginouvès 1962, especially for textual sources, along with the subsequent explorations by Faucher and Redon (2014), Meyer (1992), Redon (2011), and Römer (2013). Nielsen (1985), DeLaine (1989), and Broise (1994) raised the profile of Greek baths in the western Mediterranean by their investigations into the much-debated topic of the transition from Greek to Roman baths. Fagan 2001 is a useful summary of the state of this question of origins, although some of his conclusions have been superseded by more recent research. Since Fagan, major archaeological investigations have been undertaken at Greek baths in Sicily and South Italy that are resulting in important revisions, especially in relevant articles in Lucore and Trümper 2013. For gender issues related to the architecture of Greek baths, see Trümper 2012. For domestic Greek baths, see Trümper 2010. For more on the role of technology in Greek baths, see Greene 2000 and 2008, Wikander 2000, Cuomo 2007, Oleson 2008, Lucore 2016 and Lucore forthcoming.

In 2006, the French Balnéorient project (<http://balneorient.hypotheses.org>, with regular updates) held its first conference on baths and bathing in all periods in Egypt, which publicized the remarkable phenomenon of Egyptian Greek baths. Boussac, Fournet, and Redon 2009 is the resulting publication, which includes the first comprehensive review of the evidence and other articles on individual baths and related topics. The first conference organized exclusively on Greek baths was held in 2010 at the American Academy in Rome for the purpose of highlighting the most recent archaeological evidence from throughout the Mediterranean. The proceedings of the conference, in Lucore and Trümper 2013, include, in addition to a complete and up-to-date bibliography, the first comprehensive catalog of all known Greek public baths from all areas of the Mediterranean, a major resource for anyone studying Greek baths. Also of note was a 2011 conference held at the École française de Rome, which focused on the origins of baths in the Mediterranean (Coarelli, Battaglini, and Tsiolis forthcoming).

REFERENCES

Ballet, P. ed. 2012. *Grecs et Romains en Égypte: Territoires, espaces de la vie et de la mort, objets de prestige et du quotidien*. Paris.

Bergmann, M. and M. Heinzelmänn. 2009. "The Bath at Schedia." In Boussac, Fournet, and Redon, eds., 87–100.

Boussac, M.-F., T. Fournet, and B. Redon, eds. 2009. *Le Bain collectif en Égypte*. Études urbaines 7. Cairo.

Boussac, M.-F., S. Denoix, T. Fournet, and B. Redon, eds., 2014. 25

siècles de bain collectif en Orient (Proche-Orient, Égypte, péninsule Arabique). Balaneia, thermes et hammans. Études urbaines 9. Cairo.

Broise, H. 1994. "La Pratique du bain chaud par immersion en Sicile et dans la péninsule italique à l'époque hellénistique." *Xenia Antiqua*, 3: 17–32.

Coarelli, F., G. Battaglini, and V. Tsiolis, eds. Forthcoming. *L'Origine delle Terme: Fregellae e i complessi termali Repubblicani fra Italia e Spagna.* JRA, Suppl. Portsmouth, RI.

Cuomo, S. 2007. *Technology and Culture in Greek and Roman Antiquity.* Cambridge.

DeLaine, J. 1989. "Some Observations on the Transition from Greek to Roman Baths in Hellenistic Italy." *MedArch*, 2: 111–125.

Di Pasquale, G., C. Parisi Presicce, and B. Basile, eds. 2013. *Archimede: Arte e scienza dell'invenzione.* Florence.

El-Mosalamy, A.H.S., ed. 1992. *Proceedings of the XIXth International Congress of Papyrology, Cairo 1989.* Cairo.

Fagan, G. 2001. "The Genesis of the Roman Public Bath: Recent Approaches and Future Directions." *AJA*, 105 (3): 403–426.

Faucher, T. and B. Redon. 2014. "Le prix de l'entrée au bain en Égypte hellénistique et romaine d'après les données textuelles et numismatiques." In Boussac, Denoix, Fournet, and Redon, eds., 835–855.

Ferrari, G. 2002. *Figures of Speech: Men and Maidens in Ancient Greece.* Chicago.

Fournet, T. and B. Redon. 2009. "Les Bains souterrains de Taposiris Magna et le bain de tradition hellénistique en Égypte." In Boussac, Fournet, and Redon, eds., 113–137.

Fournet, T. and B. Redon. 2013. "Heating Systems of Greek Baths: New Evidence from Egypt." In Lucore and Trümper, eds., 239–263.

Ginouvès, R. 1959. *L'Établissement thermal de Gortys d'Arcadie.* Études péloponnésienes 22. Paris.

Ginouvès, R. 1962. *Balaneutikè: Recherches sur le bain dans l'antiquité grecque.* BÉFAR 200. Paris.

Greene, K. 2000. "Technological Innovation and Economic Progress in the Ancient World: M.I. Finley Reconsidered." *Economic History*

Greene, K. 2008. “Historiography and Theoretical Approaches.” In Oleson, ed., 62–90.

Kosso, C. and A. Scott, eds. 2009. *The Nature and Function of Water, Baths, Bathing and Hygiene from Antiquity through the Renaissance*. Technology and Change in History 11. Leiden.

Kreiner, R. and W. Letzner, eds. 2012. *SANITAS PER AQUAM*. Proceedings of the International Frontinus Symposium on the Technical and Cultural History of Ancient Baths. *BABesch*, Suppl. 21. Leuven.

Ladstätter, G. and V. Scheibelreiter, eds. 2010. *Städtisches Wohnen im östlichen Mittelmeerraum. 4. Jh. v. Chr.-1. Jh. n. Chr.* Vienna.

Lucore, S.K. 2009. “Archimedes, the North Baths at Morgantina and early developments in vaulted construction.” In Kosso and Scott, eds., 43–59.

Lucore, S.K. 2013a. “Bathing in Hieronian Sicily.” In Lucore and Trümper, eds., 150–179.

Lucore, S.K. 2013b. “Archimede e le Terme Nord.” In Di Pasquale, Parisi Presicce, and Basile, eds., 70–73.

Lucore, S.K. 2016. “Le Terme Sud di Morgantina: Impianti Idrico e di Riscaldamento.” in Maniscalco, ed., 90–100.

Lucore, S.K. Forthcoming. “The Technology of Ancient Greek Baths: The Case of Morgantina.” In Coarelli, Battaglini, and Tsiolis, eds.

Lucore, S.K. and M. Trümper, eds. 2013. *Greek Baths and Bathing Culture: New Discoveries and Approaches*. *BABesch*, Suppl. 23. Leuven.

Lukaszewicz, A. 1986. *Les Édifices publics dans les villes de l'Égypte romaine*. Warsaw.

Manderscheid, H. 2000. “The Water Management of Greek and Roman Baths.” In Wikander, ed., 467–535.

Maniscalco, L. 2016. *Morgantina ieri e oggi*. Rome.

Meyer, B. 1992. “Les Femmes et les bains publics dans l'Égypte grecque, romaine et byzantine.” In El-Mosalamy, ed., 51–60.

Napolitani, D. and K. Saito. 2013. “Archimedes and the Baths: Not Only One Eureka.” In Lucore and Trümper, eds., 181–188.

Nielsen, I. 1985. "Considerazioni sulle prime fasi dell'evoluzione dell'edificio termale romane." *Anagram*, 14: 81–112.

Nielsen, I. 1990. *Thermae et Balnea: The Architecture and Cultural History of Roman Public Baths*. 2 vols. Aarhus.

Oleson, J.P., ed. 2008. *The Oxford Handbook of Engineering and Technology in the Classical World*. Oxford.

Redon, B. 2011. "Statut, revenus et fiscalité des édifices de bain en Égypte ptolémaïque." *BIFAO*, 111: 301–321.

Redon, B. 2012. "Établissements balnéaires et présences grecque et romaine en Égypte." In Ballet, ed., 155–170.

Römer, C. 2013. "The Greek Baths in the Fayum at Euhemeria and Theadelphia: A Preliminary Report." In Lucore and Trümper, eds., 229–238.

Schmidt, S. and J.H. Oakley, eds. 2009. *Hermeneutik der Bilder: Beiträge zur Ikonographie und Interpretation griechischer Vasenmalerei. Beihefte zum Corpus Vasorum Antiquorum Deutschland* 4. Munich.

Stähli, A. 2009. "Nackte Frauen." In Schmidt and Oakley, eds., 43–51.

Stähli, A. 2013. "Women Bathing: Displaying Female Attractiveness on Greek Vases." In Lucore and Trümper, eds., 11–21.

Thébèrt, Y. 2003. *Thermes romains d'Afrique du nord et leur contexte méditerranéen*. Études d'histoire et d'archéologie. Paris.

Trümper, M. 2009. "Complex Public Bath Buildings of the Hellenistic Period: A Case-study in Regional Differences." In Boussac, Fournet, and Redon, eds., 139–179.

Trümper, M. 2010. "Bathing Culture in Hellenistic Domestic Architecture." In Ladstätter and Scheibelreiter, eds., 529–572.

Trümper, M. 2012. "Gender Differentiation in Greek Public Baths." In Kreiner and Letzner, eds., 37–45.

Trümper, M. 2013. "Urban Context of Greek Public Baths." In Lucore and Trümper, eds., 33–72.

Tsiolis, V. 2013. "The Baths at Fregellae and the Transition from *Balaneion* to *Balneum*." In Lucore and Trümper, eds., 89–111.

Wikander, Ö., ed. 2000. *Handbook of Ancient Water Technology*. Leiden.

Winter, F.E. 2006. *Studies in Hellenistic Architecture*. Toronto.

Yegül, F. 1992. *Baths and Bathing in Classical Antiquity*. New York.

CHAPTER 24

Bouleuteria and Odeia

John McK. Camp II

Public gatherings for religious, political, and social reasons were a common feature of all Greek cities, which were accordingly provided with numerous appropriate venues: agoras, theaters, assemblies, council houses (*bouleuteria*), stadia, and, eventually, music halls (*odeia*). These facilities varied a great deal in size and form, depending on both the numbers to be accommodated and the primary activity the venue was intended to house.

Several cities are known to have had separate areas or buildings for large political assemblies, such as Athens, Sparta, Argos, Metapontum, and Akragas. Where remains survive, these political arenas have provisions for large numbers of people to stand or, more often, to sit. The Pnyx in Athens is thought to have been built originally around 500 BCE in order to accommodate the large assemblies of all the citizens participating in the new democracy. Another early venue built for large meetings is to be found at Argos, where 37 rows of seats are carved into the rock at the base of the acropolis, permitting seating for an estimated 2300–2500 individuals. In the Greek cities of Magna Graecia and Sicily, a regional variant of a large theatral area came to be built specifically for large assemblies. This takes the form of a round or oval building with concentric rows of benches all around and an open area in the center. The rows of seats are banked, though less steeply than in most theaters on the mainland. Examples of this type have been reported at Metapontum and Paestum (Posidonia) in South Italy, and Agrigento in Sicily. As a rule, they are unroofed and large, with a capacity of over 1000 (and perhaps as great as 8000 at Metapontum). Theaters are listed by Pausanias (10.4.2) as practically the *sine qua non* of a Greek city, and in many cities, including Athens, they would be used not only for dramatic performances but also for large public meetings. In effect, most theaters will have housed both dramatic performances and political gatherings (see [Chapter 25](#)).

Smaller versions of theaters also came to be built: bouleuteria for meetings of councils and other small political units, and odeia for musical performances. These smaller venues, theatral in spirit and form, and usually thought to differ from theaters by virtue of being roofed, are the subject of this chapter. These two types of buildings are discussed together because, despite differences in both function and design, their basic architectural forms are generally so similar that the fully developed Hellenistic or Roman bouleuterion is often indistinguishable from an odeion/odeum without the help of external

evidence. They are of similar size, built as small theatral areas with an orchestra and banked rows of seats, and both are roofed buildings. These similarities often make it difficult to distinguish the original intended purpose of the building. A bouleuterion was designed to hold a deliberative body, usually of several hundred people, rarely exceeding a thousand participants. An odeion was designed as a music hall, used for both instrumental and singing performances, also for a limited audience. The odeion proved to be such a useful and desirable building type that its history of use stretches across the Greek, Hellenistic and Roman periods in a wide geographical range in the Mediterranean.

It goes almost without saying that both types of venue are designed for performances and therefore that a given building of this generic design could accommodate both activities: political deliberation and musical events. In one case at least, we have explicit evidence of this double function: an inscription from Teos instructs those responsible for the youth of the city to arrange musical events in the bouleuterion (*SIG* 578.32–34). Nonetheless, when such a building was originally commissioned, it was presumably to serve a primary purpose, and that intended function should have had some effect on its design and plan. This envisioned function often indicates whether the building was designed as a bouleuterion or as an odeion. The sites of Troy (Ilion) ([Figure 24.1](#)), Apollonia (in Albania), and Arykanda (in Lycia) have examples of both types of buildings near to one another, allowing one to consider a general set of criteria, which help to distinguish the two.



Figure 24.1 Odeion, Troy.

Bouleuteria

Regardless of the form of government, Greek cities needed meeting places for deliberative bodies of limited size, whether the court of a tyrant, the limited franchise of an oligarchy, or the representative body of a full democracy. Examples of such meeting places are known from the literary records and inscriptions. The remains of many others have been brought to light by excavation. They are often referred to generically by the name *bouleuterion*, after *boule* (the Greek for “council”), but they are also known in ancient sources as *ekklesiasterion*, *gerousia*, *gerontikon*, and the like.

Not surprisingly, a bouleuterion is often located on or near the agora, the political and commercial center of a Greek city (see also [Chapter 21](#)). Access to the building from the main square is easy, often through a stoa or colonnaded façade and then by means of several large doors, which give access directly onto the orchestra floor. The well-preserved bouleuterion at Miletos, built in the early second century BCE, is a good example of this desired ease of access ([Figure 24.2](#)). So too is the one at Stratonikaia in Caria. There are no intervening rooms behind the orchestra, just the door-wall, with several wide doorways. There is usually no stage; the speaker seems to have spoken from the orchestra floor or perhaps from a raised *bema* (speakers’ platform), though no permanent traces have been found. The banked rows of seating can be either curvilinear (e.g., Miletos, Stratonikaia, Metropolis, Ilion, Aigai) or rectilinear (e.g., Priene, Notion, Herakleia), though the option of a rectilinear arrangement seems to be specific to bouleuteria, and does not occur in odeia. The rectilinear seating plan may have originated in the small, early deme theaters in Attica. The theaters at Rhamnous, Ikaria, and Euonymon all seem to have been rectilinear, as is much of the seating at Thorikos, which may go back to the sixth century BCE. To this list should be added the rock-cut seats at Argos, also dated to the fifth century BCE, and a row of straight benches along the east slopes of Kolonos Agoraios in the Athenian agora, also dating to the fifth century BCE (Boegehold 1967).



Figure 24.2 Bouleuterion, Miletus.

Source: J. Camp.

Early on, bouleuteria may have followed a general rule of many Greek performance areas involving large audiences. If the event was a spectacle entailing movement and something to be seen, such as an athletic contest or a dramatic performance, then the audience was raised on banked rows of seating, as in a stadium or theater. If the event involved primarily speaking and hearing, however, with limited or no movement on the part of the performer, then it was far easier to raise the speaker rather than the entire audience. This latter situation is to be encountered in Thucydides' account of the funeral oration delivered by Pericles in 431 BCE (Thuc. 2.34): "Pericles, son of Xanthippos, was chosen to speak. And when the proper time came he advanced from the tomb and took his place on a platform which had been built high in order that his voice might reach as far as possible in the throng, and spoke." Similarly, the rhapsode in Plato's *Ion* (535 d–e) speaks of "looking down" on his audience from his bema, a situation illustrated in many black and red figured vases showing musical performances, with the singer or musician standing on a platform of two or three high steps. At the Pnyx, the meeting place of the full Athenian assembly, the speaker was also raised on a high stepped rock-cut platform, and Antiphon (6.40) indicates that the Athenian bouleuterion had a bema in the fifth century BCE as well.

The early bouleuteria seem to have had level floors, perhaps with wooden benches, and, because there is little or no consistency as to architectural form,

recognizing one depends on other criteria, such as size, location, and literary or epigraphical evidence. One of the earliest examples has been identified at Olympia on the basis of descriptions of the Sanctuary of Zeus by Xenophon in the fourth century BCE (*Hell.* 7.4.31) and Pausanias in the second century CE (5.23.1; 5.24.1; 5.24.9). The building consists of two apsidal halls with Doric façades set side by side facing east, each measuring approximately 11×22 m, with a courtyard between them measuring approximately 14 m on a side. The northern apsidal hall is the earliest element, thought to date to the late sixth century BCE, while the southern hall was added in the first half of the fifth century BCE. Without the literary information it is by no means clear that the structure could or would have been recognized as a bouleuterion.

Other early bouleuteria are the Old and New Bouleuteria in Athens, dating to the late sixth and late fifth centuries respectively, both built to house 500 councilors. Once again, there is little about the surviving floor plans or ruins that lead to this identification, which rests on location, Pausanias' description of the Athenian Agora, and other literary sources (Wycheley 1957). The Old Bouleuterion measures 23.5×23.8 m (exterior foundations), for an interior maximum space of approximately 22×22 m (about 484 m^2). The New Bouleuterion measures 17.5×22.5 m (exterior foundations), for an interior maximum space of approximately 16.5×21.5 m (around 355 m^2). Both are rectilinear in plan, and the seating arrangements are not entirely clear. Though the rows of seats may also have been rectilinear rather than curved, they may have been set on level ground rather than banked, particularly evident in the New Bouleuterion, built in the last quarter of the fifth century BCE. It was set into the slopes of Kolonos Agoraios, which was quarried back extensively to make sufficient room for the building. This quarrying was brought down to a uniform low floor level. If the building had banked seats, it is hard to see why the quarrying was not stepped down to reflect that arrangement, as is the case with numerous rock-cut theatral areas in the Greek world, such as Argos, Akragas, the Panionion, and the theaters at Chaironeia, Syracuse, and the Letoön.

A separate but related category of early bouleuteria are those used by leagues or federations for meetings of the representatives of the various member cities. These leagues often had their meeting places within major sanctuaries. Known leagues with regular meetings include, but are not confined to, the Achaeans, the Aetolians, the Acarnanians, the Boeotian Confederacy, the Chalcidic League, the Carians, the Cretans, the Delian League, the Delphic Amphictyony, the Epirotes, and the Lycians. Three such federal meeting places have been recognized in the archaeological record. At Delphi the bouleuterion of the *hieromnemes* (representatives of the Amphictyonic Council) can be identified with some probability by its location near other known monuments. Their second meeting place, in a sanctuary of Demeter near Thermopylai, has not yet been recognized. Also found in mainland

Greece is the Phokikon, the federal sanctuary of the Phocians, which lies east of Mount Parnassos, some 4 km south of ancient Daulis (French and Vanderpool 1963: 213–225). The building is unexcavated, though architectural blocks and inscriptions presumably mark its site. Pausanias describes the building as large, with interior columns and banked rows of seats rising up along opposite sides, with statues of divinities at the end. It seems likely, therefore, that the building and seating were both rectilinear. The third federal meeting place is that associated with the Panionion, a sanctuary of Poseidon Helikonios at the base of Mount Mykale in Asia Minor (Figure 24.3). Representatives of the 12 Ionian cities met here. The altar of Poseidon has been recognized at the top of a low hill, at the base of which is a small rock-cut theatral area consisting of several (at least 11) rows of rock-cut seats carved in a semicircle. There is no trace of any roofing (Kleiner, Hommel, and Müller-Wiener (1967); for an alternate location, see Lohmann (2007: 59)).



Figure 24.3 Bouleuterion, Panionion.

Source: J. Camp.

Bouleuteria were first collected and analyzed in the 1940s by William McDonald. Because excavators sometimes claim identifications not readily accepted by everyone, McDonald listed them and assigned a rating system of one to four stars, not unlike hotel ratings in guidebooks. One star means the identification as a bouleuterion is possible, while four stars means it is certain. There were only four four-star bouleuteria, and eight three-star bouleuteria. To

his list of some 29 examples known then, we can now add four highly probable or certain examples, at Arykanda in Lycia, Iasos in Caria, Metropolis in Ionia, and Sagalassos in Pisidia, along with the Panionion and Phocicon. Also identified, but not fully excavated, are possible bouleuteria at Aizanoi in Phrygia, Alabanda in Caria, Laodicea on the Carian/Phrygian border, Pinara in Lycia, Teos in Ionia, and Termessos in Pisidia. Simena (Lycia) and Knidos both have small theatral buildings which may be bouleuteria, and there is epigraphical evidence for the bouleuterion at Kyaneiai in Lycia. Thus to McDonald's list of 29, we should now add 15 additional probable or possible examples, bring the total of known bouleuteria to something over forty. The latest list has been compiled by D. Gneisz (1990).

Odeia

The earliest building known as an odeion is unique in several ways and precedes other odeia by centuries. Following the Battle of Plataia in 479 BCE, the Athenians received, as part of their share of booty, the tent of the Persian king, Xerxes. This was no modest affair but measured some 62 × 69 m, with the roof supported by dozens of columns. It was, in effect, a barely portable version of the great, multicolumned halls, which made up a central part of the royal palaces in Persia, such as the Apadana at Persepolis. After the battle, the Athenians set up this structure in the Sanctuary of Dionysos in Athens, next to the theater. Within a generation or so, the original structure was in disrepair, and, following a proposal by Pericles, it was decided to build a more permanent version of the building on the same spot. The sources suggest that this was essentially a petrified version of the original tent, almost square in plan, with several rows of columns within.

As a building with no recognized function in Greek culture, the structure was used for a variety of purposes: law court (Dem. 59.52; Poll. 8.33), grain dispensary (Dem. 34.37), marshaling area for the military (Xen. *Hell.* 2.4.9; 2.4.24), lecture hall for philosophers (Ath. 336b; Diog. Laert. 8.7.134), and rehearsal hall for plays performed at the Dionysia (schol. Aeschin. 3.67; schol. Ar. *Vesp.* 1109). One of its earliest functions, as a venue for musical performances, gave the building its name, the Odeion of Pericles. Plutarch gives the best description of the building, its name, and function:

The Odeion, which was arranged internally with many rows of seats and many columns and had a roof which sloped down from a single peak, was an exact replica of the Great King's tent, so they say, and this too was built under the superintendence of Pericles ... Desirous of honor, Pericles, then, for the first time decreed that a musical contest be held as part of the Panathenaic festival; he was elected director and set the manner in which people played the flute, sang, or played the kithara. Then and in later times

these contests were performed in the Odeion. (*Per.* 13)

The present remains, largely unexcavated, date to the first century BCE and are the work of King Ariobarzanes of Cappadocia, following the deliberate destruction of the original fifth-century BCE building by the Athenians in order to deprive the Roman general Sulla of timber during his siege of the Acropolis in 86 BCE.

Because of its unusual acquisition, building history, cultural unfamiliarity, and invented functions at Athens, the architectural form of this first odeion was not a model for later odeia. Odeia as purpose-built roofed theatral areas for musical performances do not make their appearance until several centuries after the Odeion of Pericles. Their only connection with the Athenian building is in nomenclature, the fact that musical events took place there, and that they are roofed. In general, the Odeion of Pericles is a distinct anomaly in its architectural form.

It is worth noting, however, that similarly large, roofed hypostyle halls were occasionally used for other gatherings in the Greek world. The Telesterion at Eleusis uses the form for large gatherings of initiates in the Eleusinian Mysteries, perhaps as early as the late sixth century BCE, and reached monumental size in the fifth century, when it measured just over 51 m on a side (about 2600 m²), with a roof supported on 42 columns (6 × 7 columns). Spectators were accommodated on a level floor and presumably stood; eight rows of steps (rock-cut at the west) along the walls allowed an improved view for those far from any activity taking place near the center of building. The Thersilion at Megalopolis, built in the fourth century BCE, was designed to accommodate meetings of the Arcadian Confederation of up to 10 000 representatives (Paus. 8.32.1). It measured approximately 67 × 53 m (about 3500 m²), with a seating capacity of 6000 or estimated space for 10 000 standing. The auditorium sloped down slightly, and rows of columns to support the roof were aligned so as to allow optimum sight lines. Other smaller hypostyle halls, such as that near the agora at Argos, are often identified as bouleuteria.

The earliest dated example of an odeion as a purpose-built roofed theatral area with banked seating for musical performances is probably that in Pompeii, built soon after Sulla's refounding of the city in 80 BCE (Richardson 1988; Parslow 2007). The date is based on the dedicatory inscription, found in the building in 1769, naming the two officials responsible for its construction, C. Quinctius Valgus and M. Porcius, and referring to it as the *theatrum tectum* (*CIL* 10.844). The building is rectangular, with curved banks of seating. Below a parapet, the orchestra had a series of steps to carry a *prohedria*, or seats of honor for high officials. A floor of colored marble in the orchestra is later, probably Augustan, the work of M. Oculatius Verus (*CIL* 10.845). The exterior dimensions of the building are 28.6 × 30.0 m, and the lateral walls are

thicker than the others (1.04 as opposed to 0.89 m), presumably in order to support the timber truss roofing. The dedicatory inscription is in Latin, the officials are Romans, and the building is laid out in Roman feet. Even though the earliest securely dated odeion was built in a mid-sized provincial town in Italy, it is not necessarily the birthplace of the type. The architectural prototype of an odeion is clear enough: the Hellenistic bouleuteria of the Greek world. What, however, was the cultural origin? Pompeii in the first century BCE consisted of a population of Oscans, Samnites, and Italian/Roman veterans who had served with Sulla in Greece, and there must have been an educated elite among them who desired frequent musical performances and lectures.

An odeion follows the form and development of the Greek theater in the Roman period, with a semicircular auditorium. In several cities they are paired with and close to the theater: Corinth, Pompeii, Patara, and Lugdunum (Lyon). In theory, an odeion can be built almost anywhere within the city, though public areas seem to be preferred. More important than location in identifying an odeion is the question of access to the stage and orchestra. Often the orchestra is sunken and largely inaccessible from the seating area, as is the stage, which is almost always raised several feet higher than the orchestra floor. Access to the seating of the auditorium is usually through arched *parodoi* from the sides and through stairways at the back. Easy access to the orchestra floor was not regarded as necessary, either for the audience or the performer, who would perform from the raised stage. Behind the stage there are often rooms where equipment and instruments could be kept and where performers could prepare and wait. As noted, all known odeia have curved rather than rectilinear seating plans. Not surprisingly, seating capacities of purpose-built odeia are often appreciably greater than that of bouleuteria, holding a few thousand individuals.

Particularly noteworthy in the decoration of many odeia were the elaborate stage buildings and the use of varied imported colored marbles. Odeia were a luxurious amenity and not an essential component of Roman urban life. Despite their elegance, ancient attestations of odeia are rare. Other than the two in Athens, referred to by Pausanias and Philostratos, other references to odeia include: Naples (Stat. *Silv.* 3.5.91), Patara (*CIG* 4286.10), Patras (Paus. 7.20.6), Philadelphia (*CIG* 3422.17–18), Rome (Suet. *Dom.* 5), Selge (*IK* 17.14), and Thessaloniki (*SEG* 24.270).

More than fifty odeia have been recognized in the Greco-Roman world; most date from the first century BCE through the second century CE. They are found especially in Greece, Italy, and Asia Minor, occasionally in the Levant, Italy, North Africa, and Gaul. Generally, odeia seem to be a phenomenon of the Roman world, largely confined to cities of some significance. Designed odeia are found at Athens, Patras, Alexandria, Patara in Lycia, and Corinth; that is, in major cities and regional centers of the eastern Roman Empire,

where Hellenistic influence was the strongest (see also di Napoli 2010). Rome itself seems not to have an odeion until the time of Domitian, and Lugdunum, the capital of Gaul, had one.

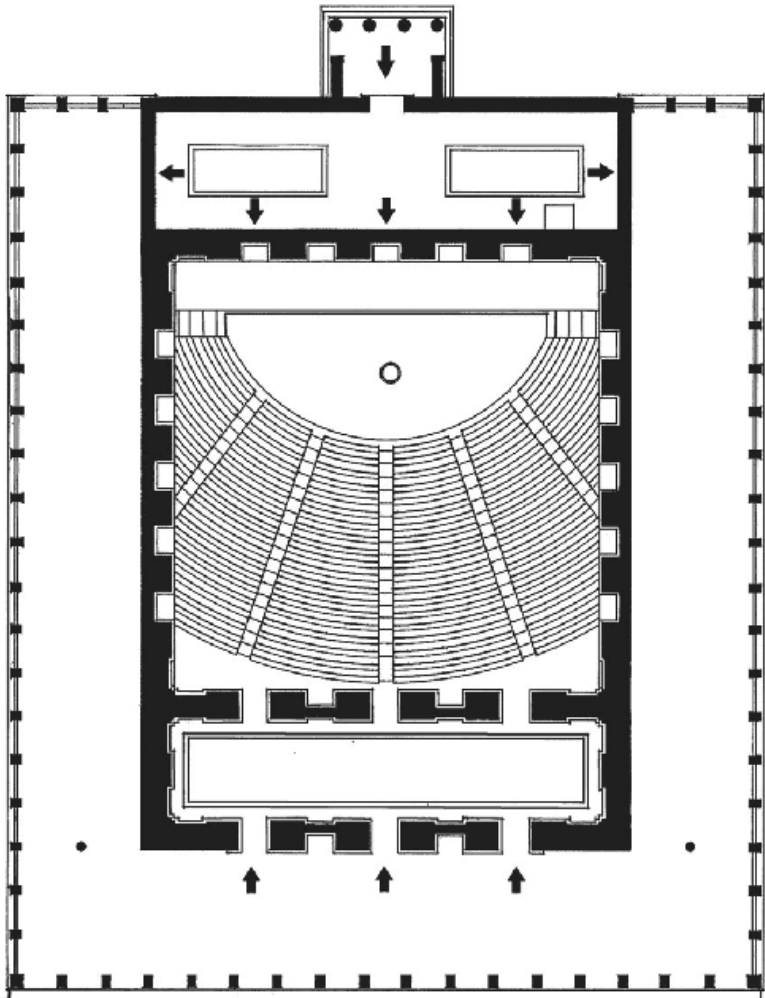
Two Athenian Odeia

Two of the most elegant and largest examples of odeia in the Roman world are both, as it happens, to be found in the city of Athens. This may well be because the city had a long and well-established tradition as the educational and cultural center of the Mediterranean, based on the philosophical schools, the Academy, the Lyceum, and the Stoa, which found their origin in the fourth century BCE. The Roman aristocracy followed Hellenistic dynasts in both studying at and honoring this ancient seat of learning. They are among the very few odeia discussed or described in the ancient literary sources. With one dating to the first century BCE and the other to the second CE, the two Athenian buildings span the period of most odeia and will serve as models of the type.

The Odeion of Agrippa in the Athenian Agora is estimated to have held 1000–1200 spectators and to have had an original open span of 25–28 m, though the roof eventually collapsed, and both the capacity and span were cut in half in a reconstruction of the second century CE (Figure 24.4). The building was excavated by various scholars and then studied and published by Homer Thompson in one of the fullest archaeological studies of any *odeion* (1950). The building is associated with the passage in Pausanias (1.8.6) referring to it as “the theater called the odeion,” and two passages in Philostratos’ *Lives of the Sophists* (2.5.4, 2.8.4), as “the theater in the Kerameikos known as the Agrippeion.” The name Agrippeion would seem to associate the construction of the building with Agrippa, son-in-law of Augustus. Agrippa visited Athens in about 15 BCE, a few years before his death in 12 BCE, and he was honored by the Athenians with a statue on a tall pedestal at the entrance to the Acropolis. Archaeological evidence from the building also suggests a date of construction in the latter half of the first century BCE. The building was a lavish one, standing several stories high, with engaged Corinthian pilasters decorating solid walls on three sides and a colonnade of massive columns, approximately 1.07 m in diameter, on the south side. The open colonnade would have provided good light, supplemented by windows restored along the side walls between the pilasters. Within, the rows of curved seats came down to the floor of the orchestra, which was paved in colored marble slabs of varied shapes, in an early appearance in Greece of *opus sectile*. The stage was 1.20 m high, composed of Hymettian, Pentelic, and Karystian marbles, with the front decorated with sculpted herms with alternating male and female heads. Access to the auditorium was from the south, while the area north of

and behind the stage was a separate “backstage” area, entered through a small, separate porch.

(a)



(b)

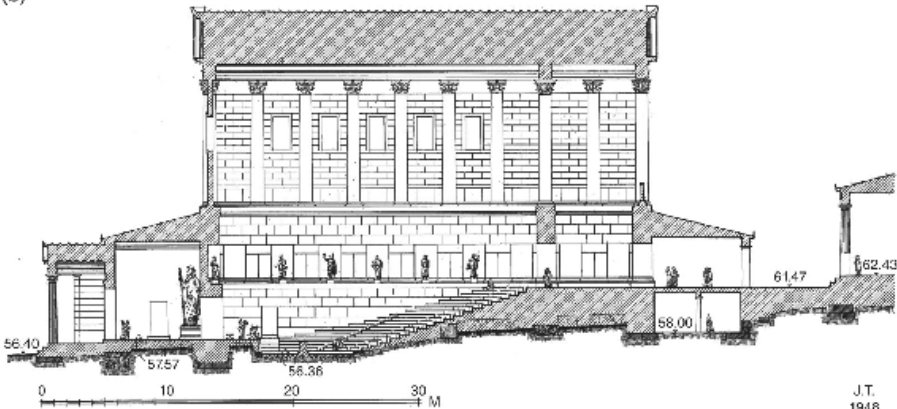


Figure 24.4 Odeion of Agrippa, Athens (a) ground plan, first phase (Augustan, late first century BCE); (b) cross-section, first phase (Augustan, late first century BCE), looking east.

Source: American School of Classical Studies at Athens.

When the roof of the Agrippeion collapsed (mid-second century CE), and the building was rebuilt, a new monumental entrance was added, decorated with massive sculpted figures of giants and tritons. In the new building the span of the roof and the capacity of the auditorium were reduced by half, and the references to it by Philostratos seem to suggest that this smaller version was used thereafter primarily for lectures and philosophical discourse. The musical and other performative functions were now given over to a new building, the odeion of Herodes Atticus, which was constructed on the south slopes of the Acropolis at this same time.

Pausanias (7.20.6), writing about 165 CE, characterized the odeion of Herodes Atticus as the grandest in Greece (**Figure 24.5**). It may well be the grandest known from antiquity, both in terms of size and decoration. Herodes was a local Athenian millionaire, who also built a marble stadium for the Athenians and erected several other handsome buildings in cities and sanctuaries throughout Greece. The odeion at Athens was built in memory of his wife, Regilla, who died around 160 CE. It seated 5000 people on marble benches and had an elaborately decorated scene building, which rose three stories high. The entrance hall to the south was floored with mosaics of mixed geometric and curvilinear designs. Philostratos refers to its roof being made of especially expensive cedarwood (*V S* 2.1.5). In addition, the excavators found a thick layer of ash and broken roof tiles covering the orchestra and lower seats, suggesting the destruction of a roof and its timbers. Nonetheless, the span of approximately 35 m without interior supports has proved a challenge to restore. G. Izenour has argued that perhaps the central part was closed only by means of canvas, like the awning (*petasos*, *velum*) known to have been used to protect the audience in both theaters and arenas (1977; 1992 but now see also Korres 2015). Such an awning may also have been needed to cover the large odeion at Lugdunum (Lyon), only a few meters smaller in diameter than the odeion of Herodes Atticus.



Figure 24.5 Odeion of Herodes Atticus, Athens, circa 160 CE.

Source: J. Camp.

Enigmatic Buildings

There are several hybrid examples of odeia, usually Roman in date, which have the character of both types of buildings. At both Ephesos and Aphrodisias, the location on the agora and a lack of “backstage” facilities would seem to suggest the buildings were intended to serve as bouleuteria, while the sunken orchestra and raised stage with an elaborately decorated scene building (at Aphrodisias) indicate a primary function as an odeion (Figure 24.6). At Nysa it appears as though a standard Hellenistic bouleuterion, referred to as the *gerontikon* by Strabo in the first century BCE/CE, was converted into an odeion in the second century CE by sinking the orchestra and adding a raised stage and an elaborately decorated scene building (Figure 24.7). Similarly, the fifth-century rock-cut auditorium of Argos was converted into an odeion with curved seating in the Roman period. Other possible conversions from bouleuterion to odeion have been suggested for Messene and Miletos, where raised stages were added. Presumably these conversions were brought about by the changing needs of the municipality in the Roman world.



Figure 24.6 Odeion, Aphrodisias.

Source: J. Camp.



Figure 24.7 Gerontikon (Bouleuterion), Nysa.

Source: J. Camp.

Setting

With a few exceptions (at Eretria and at Dion), Greek theaters were set into a hillside to provide most if not all of the slope needed for banked rows of seats. This prerequisite is not so necessary with smaller theatral buildings. The position of all bouleuteria and many odeia is determined by the location of other associated public facilities, especially agoras and other peristyle courtyards. Level ground was often favored for such large complexes, and in many instances, the Roman expertise with vaults comes into play to provide the height and slope needed for banked rows of seats. Two types of support are favored. One involved laying foundations to support radiating rising vaults, such as at Aphrodisias and Epidauros. The other type used a single large vaulted passageway creating a cryptoporticus in the form of the letter “C,” the top and inner curve of which could provide the necessary banked seating around the orchestra: this arrangement is found at Anemurium, Bargylia, Gortyn, and Iasos.

Seating Capacity

Determining capacity depends on measuring or restoring linear meters of seating and then dividing by a certain allotted space per individual. Anyone who flies or has attended the theater or a sporting event knows that the present allowance per individual can vary considerably. The same was probably true in antiquity. There is evidence that blocks of seats were assigned to political, social, or economic groups but little reliable evidence for individual seating. Vertical marks on the fronts of theater seats in Athens are about 0.41 m apart, while in the theater at Corinth they are only 0.36 m apart.

Another surviving indicator for the likely widths of seats is the spacing of the openings in the seats of the known communal latrines, though these might be expected to be a bit generous in relation to other forms of seating. As it turns out, they also vary considerably in their spacing, as even a cursory comparison makes clear. At the Byzantine shops southwest of the large baths at Sardis, the spacing is a stingy 0.43 m; at Ephesos, in the Vedius gymnasium in they are 0.48 m apart, while in the baths of Scholastica they are spaced 0.60 m apart. In Athens, the seat blocks collected by the large latrine east of the Roman market vary from 0.60 to 0.70 m. With such variability within a single city, and perhaps within a single building, it is clear that any attempt to compute capacity can be little more than a reasonable guess. Despite the uncertainty, a common estimated allotment is in the region of 0.45–0.50 m

(about 16–18 inches) per individual.

As noted, the capacity of a bouleuterion will have been determined by the maximum number of people expected to meet, usually numbered in the hundreds. Athens, with a council of 500, will have had one of the largest deliberative bodies, though the bouleuterion at the large city of Miletos is thought to have accommodated 1200–1500. The estimated 600–640 people who could be seated in the ekklesiasterion at the small city of Priene suggests – as does its name – that it held the full voting body of the city and not just the council (Figure 24.8). The evidence from assemblies suggests there was a huge difference between available capacity and the numbers of those actually eligible to attend, indicating that only limited participation was expected in many civic venues. Scholars have determined that an absolute maximum of 14 800 Athenians could have been accommodated in the Pnyx, and many estimates are considerably smaller, despite a much larger population of full citizens. Similarly, the rock-cut auditorium at Argos has a capacity of about 2300–2500, presumably too large for any representative body but well below the probable full citizen population of the city, which could field 6000–7000 hoplites.



Figure 24.8 *Ekklesiasterion* (Bouleuterion), Priene.

Source: J. Camp.

In contrast, odeia are often large enough to accommodate spectators in the thousands. The estimated capacity of the Odeion of Herodes Atticus in Athens, for instance, is about 5000 people (diameter approximately 75 m), and

there are several similarly large odeia: Lyon (3000), Sagalassos (3000), Corinth, Patras, and Pompeii (1500).

Roofing

With the larger odeia comes the problem of how they could be roofed, especially as many of them have no indications of interior supports, which would affect sight lines and perhaps acoustics. Izenour (1992) has tackled this question from a structural and engineering point of view, discussing and illustrating the possible systems for several dozen odeia. Essentially, timber truss roofs are restored, though once the span exceeds 25 m, such restorations become increasingly difficult. The expansion and contraction of the wood during alternating dry and wet seasons over time causes problems of stability. Along with Lugdunum (Lyon), the two large odeia of Roman Athens are among the most difficult to reconstruct convincingly. M. Korres offers a reconstruction of the odeion of Herodes Atticus that uses primarily wood braced with existing piers behind the uppermost row (2014).

Summary

Despite the numerous overlaps, uncertainties, and assorted exceptions, several criteria emerge from this discussion to serve as general guides to the identification of a bouleuterion as opposed to an odeion:

1. *Plan*: A bouleuterion can have a wide variety of floor plans, depending on the number of participants to be accommodated: long and relatively narrow, square or rectangular, with or without interior supports. Odeia tend to be square or deep rectangular buildings, though occasionally they are semicircular, like a small theater.
2. *Seating arrangements*: A bouleuterion can have rectilinear or curved seating; odeia have curved seating areas. Many bouleuteria seem to have had level seating, while odeia have banked rows of seats.
3. *Internal design*: The control of traffic patterns, entrances, access to the orchestra, and the existence or absence of a raised stage are all significant. An elaborate scene building and the lavish use of colored marbles are also to be expected in an odeion.
4. *Capacity*: Odeia tend to have a larger capacity, often between 1000 and 5000 spectators, while bouleuteria are usually restricted to several hundred at the most.
5. *Date*: Odeia are generally Roman in date, no earlier than the first

century BCE, whereas bouleuteria go back to the Archaic period, are common throughout the Hellenistic period, and are increasingly rare in Roman times. In several Roman cities their function was filled by a *curia*.

6. *Location*: A bouleuterion is usually closely associated with the agora of the city, whereas an odeion may be located in a central location, though it does not have to be.
7. *Geography*: Bouleuteria, reflecting their origin in the independent Greek city-state, are confined largely to areas of Greek influence, especially the Greek mainland and Asia Minor. Odeia are a feature of Roman urbanism and are found throughout the empire.

Further Research

The primary function of the odeia was to serve as a venue for concerts and musical performances, and they were surely used also for academic lectures and other small performative gatherings. The elaborate decoration preserved on some halls, such as marble revetment, imported marble columns for the stage set, marble seats, and mosaic or marble floors, suggests that the hall was intended for an elite, educated audience. Areas for further research on ancient odeia include a possible relationship between the development of musical performances and the establishment of odeia, of educational and rhetorical practices and odeia (especially in the Hellenic eastern Mediterranean), and a technical investigation and reconstruction of the acoustics of the odeia (see, e.g. Vassilantonopoulos and Morjopoulos 2009).

Compendium

Below is a composite list of small roofed theatral buildings in the Greco-Roman world, usually identified as either bouleuteria or odeia, about 115 in all. Counting those converted from a bouleuterion to an odeion as both, there are some 50 known bouleuteria and 60 odeia, with a half-dozen or so too uncertain to classify/identify. The core of the list comes from the studies on bouleuteria by McDonald (McD): *Political Meeting Places of the Greeks* (1942) and Gneisz (G), *Das Antike Rathaus* (1990). For odeia, the principal studies are those of Izenour (I): *Roofed Theaters in Classical Antiquity* (1992) and Meinel (Mn): *Das Odeion* (1980). The pages cited in those works will lead the reader to bibliographies on specific buildings. Short references in square brackets [---] refer to Izenour, pp. 220–222, where he lists, but does not necessarily discuss, ancient roofed odeia. There are discrepancies and

uncertainties in many of the specific identifications, and undoubtedly some omissions.

Other bouleuteria and odeia have been added from my own observations, which heavily favor Greece and Asia Minor. Most have been excavated relatively recently. Not surprisingly almost all the bouleuteria are located in the Greek world, just about equally divided between mainland Greece and Asia Minor. Odeia are found in roughly even numbers in Greece, Asia Minor, and Italy, with a few scattered across North Africa, Gaul, the Middle East, and elsewhere in Europe.

AGHIA PELAGIA	B?	G: 312–313
AIGAI	B	McD: 166–167; G: 301
AIZANOI	?	G: 301–302
AKRAI	B	G: 302–303
ALABANDA	B?	G: 303–304; Mn: 169ff.
ALEXANDRIA	O	
ANEMURIUM	O	I: 108–110; Mn: 234–239
ANTIOCHEA (Syria)	B?	[I: 220]
ANTIPHELLOS (Kas)	B?	G: 304–305
AOSTA (= Augusta Praetoria)	O	I: 77–83; Mn: 208–211
APHRODISIAS	B/O	I: 99–107; Mn: 321–327
APOLLONIA (Albania)	B	McD: 167–168; G: 305–306
APOLLONIA (“)	O	
APOLLONIA (Cyrene)	O	[I: 220]
ARGOS	B	G: 306–307
ARGOS	O	I: 90–94; Mn: 223–225, 288–291
ARRIASOS	B	I: 61–62
ARYKANDA	B	Bayburtluoğlu (2003: 86–93)
ARYKANDA	O	Bayburtluoğlu (2003: 114–117)
ASPENDOS	?	G: 307
ASSOS	B	McD: 168–171; G: 307–308;
		Mn: 171ff.
ATHENS, Old	B	McD: 170–179; G: 309–310
ATHENS, New	B	McD: 170–179; G: 310–312
ATHENS, Pericles	O	I: 30–35
ATHENS, Agrippa	O	I: 84–89

ATHENS, Herodes Atticus	O	I: 132–139; Mn: 80–117
BARGYLIA	O	Bean (1971: 85)
BUTHROTON (=Butrint)	O	I: 95–98; Mn: 225–232
CALAURIA	B?	McD: 179–181
CALLION (Kallipolis, W. Lokris)	B?	G: 325–326.
CALYDON	B?	[I: 220]
CANATHOS (Palestine)	O	Mn: 294–296: inscr. <i>CIG</i> 4614.3–4
CARTHAGE	O	Mn: 312ff.
CATANIA	O	Mn: 311ff.
CIBYRA	B?	
CORCYRA	O?	[I: 220]
CORINTH	O	Mn: 59–80, 247–252, 287ff.
CORINTH	B	McD: 181–182
COS	O	Mn: 239–244
COSA	O	I: 114–118
CRETOPOLIS	B	Mn: 179
CYRENE	O	Mn: 296–298
DELOS	B?	McD: 183–184; G: 315 Mn: 157–159
DELPHI	B	McD: 185–192; G: 316
DODONA	B	G: 316–317
DOUGGA	O	[I: 221]
ELEUSIS	B	McD: 187–189; G: 318; Skias (1895: 178ff.)
EMPORION	B?	G: 318–319
EPHESOS	B/O	I: 142–143; Mn: 117–133, 315–319
EPIDAUROS	O	I: 119–125; G: 319–320; Mn: 225–229.
ES SUHBA	O	Mn: 332–334
GLANUM	?	G: 320
GORTYN	B	Mn: 177ff., 183–187
GORTYN	O	I: 126–131; Mn: 253–259
HERAKLEIA (Latmos)	B	McD: 192–196; G: 322
HERAKLEION	?	[I: 220]
IAITAS	B	G: 323
IASOS	B	G: 323–324; Baldoni <i>et al.</i> (2004: 77–79)
ISTRIMUM (Crete)	O	[I: 220]
KNIDOS	O?	Mn: 370; Bruns-Özgan

KYANEIAI	B	(2002: 93)
LAODICEIA	B?	(inscription only)
LATO	B?	Traversari (2000)
LIBARNA	O	G: 328–330
LOUSOI	O	[I: 221]
LUGDUNUM (Lyon)	O	[I: 221]
LUNA	B?	McD: 196–198; G: 330
LYDAE	O?	I: 144–147; Mn: 304–309
MAGNESIA (?)	B	Lycia, bay of Fethiye
MANTINEIA	B	Bingöl (2007: 159)
MEGALOPOLIS (town)	B	McD: 198–200; G: 330–331
MEGALOPOLIS (Thersilion)	B/E	Paus. (8.30.5)
MESSENE	B/O	Arcadian League: McD: 200–204; G: 331–332; I: 36–41; Mn: 155ff.
METROPOLIS	B	McD: 204–211; G: 333–335; Mn: 319–320, 175–177
MILETOS	B	
MORGANTINA	B?	McD: 211–217; G: 335–336; I: 50–55; Mn: 167–169, 319 ff.
NEMAUSIS (=NÎMES)	O	G: 336–337.
NIKOPOLIS ad Ist.	O	[I: 221]
NIKOPOLIS (Epirus)	O	Mn: 231–234
NOTION	B	Mn: 259–267
NYSA	B/O	McD: 217–219; G: 338; Mn: 170ff.
OLYMPIA	B	McD: 219–224; G: 338–340; I: 111–113; Mn: 131, 319–320
OLYNTOS	B	McD: 224–231; G: 340–341
ORCHOMENOS	B?	McD: 231–236; G: 341–342
PAESTUM (Posidonia)	B	McD: 236–238; G: 342–343
PANIONION	B	McD: 238–240; G: 343–344
		Kleiner, Hommel, and Müller-Wiener (1967); for an alternate location: Lohmann (2007)

PARIS	O	Mn: 310ff.
PATARA	O	<i>CIG</i> 4286.10 and recent excavations.
PATRAS	O	I: 140–141; Mn: 267–280
PAUSILYPOS	O	I: 73–76; Mn: 215–219
PETRA	O	[I: 221]
PHILADELPHIA (Lydia)	O	Mn: 292–294; <i>CIG</i> 3422.17–18
PHILIPPOUPOLIS	O	Mn: 239
PHOKIKON	B	French and Vanderpool (1963: 213–225)
PIANOSA	O	Mn: 304
PINARA	B	Mn: 169
PLEURON	B?	G: 337–338
POLA	O	Mn: 313ff.
POMPEII	O	I: 66–72; Mn: 36–44, 205–207, 180–183
PONTIA	O	[I: 221]
PRIENE	B/E	McD: 88; I: 46–49; Mn: 172–175
PTOLEMAIS (Libya)	O	Mn: 330–332
RHODES	O	[I 222]
ROME	O	Mn: 298ff. (Domitian's [unexcavated]; Suet. <i>Dom.</i> 5; <i>Chron. Min.</i> 146; Jer. <i>Chron. A. Abr.</i> 2105; Amm. Marc. 16.10.14; Polemius Silvius 545; <i>Curiosum</i> : 10.600 loca = 7000 spectators)
SAGALASSOS	B	
SAGALASSOS	O	
SAMOS	B?	Mn: 154; <i>SIG</i> 976.2–11
SELGE	O	<i>IK</i> 17.14 (inscr.)
SIKYON	B	McD: 240–244; G: 351–352; Mn: 157, 166
SILLYON	O	Mn: 328ff.
SIMENA	?	Bean (1978: 117, pl. 64)
SMYRNA	O?	(Paus.)
SOLUNTUM	B	G: 352–353
SOPHIA	O	[I 221]
SPARTA	B	(Paus.)
STRATONIKAIA	B	Bean (1971: 90–91)
TAORMINA	O	Mn: 245

TEOS	B	McD: 153, 278; G: 353; Mn: 270
TERMESSOS	B	McD: 244, 284; G: 353–354; I: 56–60; Mn: 179ff.
THASOS	B?	McD: 244–247; G: 354–355; Mn: 171ff.
THASOS	O?	Mn: 370
THERMON	B	McD: 247–248; G: 355–356
THESSALONIKI	O?	Mn: 369; <i>SEG</i> 24.570
TIVOLI (Tibur)	O	Mn: 299–304
TROY	B	McD: 248–250
TROY	O	
TURIN	O	Mn: 208ff., 212ff., 219ff.
VIENNA	O	Mn: 309ff.

Appendix: Recently Excavated and/or Published Bouleuteria/Odeia

Hellenistic/Roman bouleuteria (8)

Arykanda

Iasos

Kyaneiai (inscription only)

Laodiceia

Metropolis

Panionion

Sagalassos

Teos

Hellenistic/Roman odeia (5)

Arykanda

Bargylia

Patara

Sagalassos

Thessaloniki?

Hellenistic/Roman roofed theatral buildings (5)

Aizanoi

Knidos

Pinara

Simena

Termessos

FURTHER READING

Major treatises on the bouleuterion include Krischen 1941, McDonald 1942, and Gneisz 1990. For more on the Pnyx hill, see Forsén and Stanton 1996. There is a wide variety of scholarship on the odeion. For more general information, consult Tamm-Fahlstrom 1959, Modona 1961, Meinel 1980, Rossetto and Sartorio 1994, and Isler 1997, especially see Izenour 1992. For the odeia of Athens, see Thompson (1950), Izenour 1992 (30–35, 84–89, 132–139), Gogos 2008, and Korres 2011 and 2014. See the work of Di Napoli (2010) on the use of odeia and other entertainment structures during the Roman period on the Peloponnese.

REFERENCES

Baldoni, D., C. Franco, P. Belli, and F. Berti. 2004. *Carian Iasos*. Istanbul.

Bayburtluoğlu, C. 2003. *Arykanda: The Place Near the High Rocks*. Istanbul.

Bean, G. 1971. *Turkey beyond the Meander*. London.

Bean, G. 1978. *Lycian Turkey*. London.

Bingöl, O. 2007. *Magnesia on the Meander*. Istanbul.

Boegehold, A. 1967. “Philokleon’s Court.” *Hesperia*, 36: 111–120.

Bruns-Özgan, C. 2002. *Knidos, Ein Führer durch die Ruinen*. Seljuk.

- Di Napoli, V. 2010. "Entertainment Building of the Roman Peloponnese: Theatres, *Odeia*, and Amphitheatres and their Topographical Distribution." In Rizakis and Lepeniot, eds., 253–266.
- Dobbins, J. and P. Foss, eds. 2007. *The World of Pompeii*. London.
- Forsén, B. and G. Stanton. 1996. *The Pnyx in the History of Athens*. Helsinki.
- French, E. and E. Vanderpool. 1963. "The Phokikon." *Hesperia*, 32: 213–225.
- Gneisz, D. 1990. *Das antike Rathaus*. Vienna.
- Gogos, S. 2008. *Ta Arxala Ωδεία της Αθήνας*. Athens.
- Isler, H.P. 1997. "Teatro e Odeon." *EAA*, Suppl. 5 (1971–1994): 549–563.
- Isler, H.P. 2007. "Odeum." *Brill's New Pauly*, 10: 31.
- Izenour, G. 1977. *Theater Design*. New York.
- Izenour, G. 1992. *Roofed Theaters in Classical Antiquity*. New Haven.
- Lohmann, H. 2007. "Forschungen und Ausgrabungen in der Mykale 2001–2006." *MDAI(I)*, 57: 59–178.
- Kleiner, G., P. Hommel, and W. Müller-Wiener. 1967. *Panionion und Melie*. Berlin.
- Korres, M. 2011. "Die Überdachung des Theaters bzw. Odeion des Herodes Atticus in Athen." In Von Kienlin, ed., 273–286.
- Korres, M. 2015. *The Odeion Roof of Herodes Atticus and Other Giant Spans*. Athens.
- Krischen, F. 1941. *Antike Rathaus*. Berlin.
- McDonald, W. 1942. *Political Meeting Places of the Greeks*. Baltimore.
- Meinel, R. 1980. *Das Odeion*. Frankfurt.
- Modona, A.N. 1961. *Gli Edifici Teatrali Greci e Romani*. Florence.
- Parslow, C. 2007. "Entertainment at Pompeii." In Dobbins and Foss, eds., 212–223.
- Richardson, L. 1988. *Pompeii, an Architectural History*. Baltimore.
- Rizakis, A.D. and C.E. Lepeniot, eds. 2010. *Roman Peloponnese III:*

Society, Economy and Culture under the Roman Empire. Athens.

Rossetto, P.C. and G.P. Sartorio. 1994. *Teatri greci e romani alle origini del linguaggio rappresentato I–III*. Rome.

Skias, A. 1895. “Περὶ τῆς ἐν Ἐλευσίνι Ἀνασκαφῆς.” *Praktika*, 1895: 160–194.

Tamm-Fahlstrom, B. 1959. “Remarques sur les Odeons de Rome.” *Eranos*, 58: 67–71.

Traversari, G., ed. 2000. *Laodicea di Frigia*. Rome.

Thompson, H.A. 1950. “The Odeion in the Athenian Agora.” *Hesperia*, 19: 31–141.

Vassilantonopoulos, S.L. and J.N. Mourjopoulos. 2009. “The Acoustics of Roofed Ancient Odeia: The Case of Herodes Atticus’ Odeion.” *Acta Acustica United with Acustica*, 95 (2): 291–299.

Von Kienlin, A., ed. 2011. *Holztragwerke der Antike: internationale Konferenz, 30. März–1. April*. München.

Wycheley, R.E. 1957. *The Athenian Agora. Vol. III: Literary and Epigraphical Testimonia*. Princeton.

CHAPTER 25

The Greek Theater

Jessica Paga

Theaters are among the most ubiquitous structures of ancient Greece, populating the urban centers and countryside of mainland Greece, Asia Minor, and southern Italy and Sicily. Their hemispherical forms, carefully orchestrated vistas, and integration into the surrounding landscape continue to impress and spark the imagination of scholars and visitors alike. Indeed, many ancient theaters continue to serve as venues for theatrical and musical performance. The frequency with which theaters appear in the Greek world and their relatively high level of preservation – even if the stone elements are lost, the theater itself often leaves a telling depression in the landscape – speak to the popularity of the theater in both the ancient and modern world. Theaters are symbols of ancient Greek society, structures that reflect and give voice to both religious and cultural concerns.

The development of the form of the theater in the Classical and Hellenistic periods can be traced alongside concomitant evolutions in its use and function. It is this overlap of form and function that provides one of the most fruitful avenues for exploration: theaters allow us to consider how built spaces were used in ancient Greece for a variety of purposes over an extended period. This multiplicity and adaptability in turn bolstered the popularity of the theater and helped to facilitate the replication of its architectural form throughout the Greek world. This chapter considers both the evolution of the form of the Greek theater and its changing uses and purposes. New areas of scholarship on the theater are highlighted in order to provide direction for future research and indicate questions or problems that continue to deserve attention.

Form: Space, Plan, and Design

The three distinct parts of the general theater form are canonized by their abundant representation in the later Classical and Hellenistic periods: (1) the *cavea*, also known as the *koilon* (literally, “hollow”) or *theatron* (“viewing area”), was the seating area and was usually divided into horizontal tiers by *diazomata* (“girdles”) and *kerkides*, or wedges of seating, which were delimited by *klimakes*, or vertical access stairways; (2) the circular orchestra, or performance area (“dancing place”); and (3) the *skene* (or *scaenae frons*),

the scene building, which was used as a backdrop to dramatic performance as well as serving as an adaptable and generic façade for an interior space, capable of representing everything from a palace (as in Aeschylus' *Agamemnon*) to a cave (as in Sophocles' *Philoctetes*) (Figure 25.1). Two passageways called *paradoi* (sg. *parados*) flanked the cavea and provided access to and from the orchestra. They were used both by the spectators to enter and exit the theater, as well as by the actors or chorus for dramatic entrances and exits during the course of the performance. An altar was frequently placed in or near the orchestra.

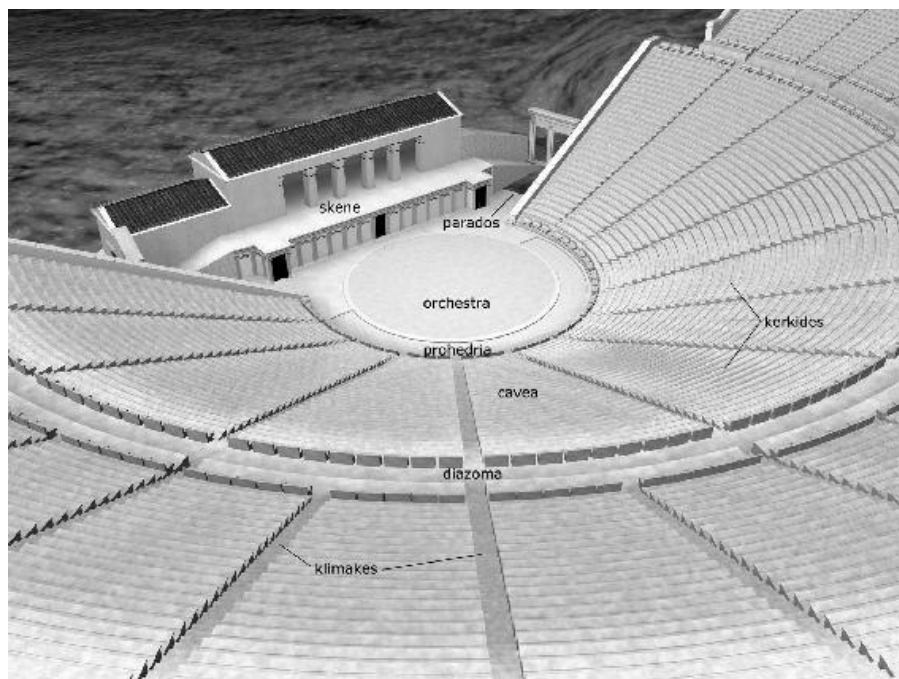


Figure 25.1 Model of a Greek Hellenistic theater, based on the theater at Epidauros, fourth century BCE, with parts labeled.

Source: Modified from computer model created by Martin Blazeby, King's Visualization Lab, King's College London.

These three parts remained relatively constant throughout the Classical and Hellenistic periods, modified to varying degrees based on the topographical siting of particular theaters or specific demands of ritual and function. The cavea was generally sunk into a natural hillside, a factor that reduced construction expenses (both cost of materials and labor time) but was also predicated on preexisting landscape conditions. The slope of the hill could vary greatly and this in turn could affect the steepness of the seats, the number of rows, and the overall height of the theater. In this respect, the Theater of Dionysos in Athens, for example, can be usefully compared to the theater at Pergamon, where the steepness of the Pergamene citadel resulted in a

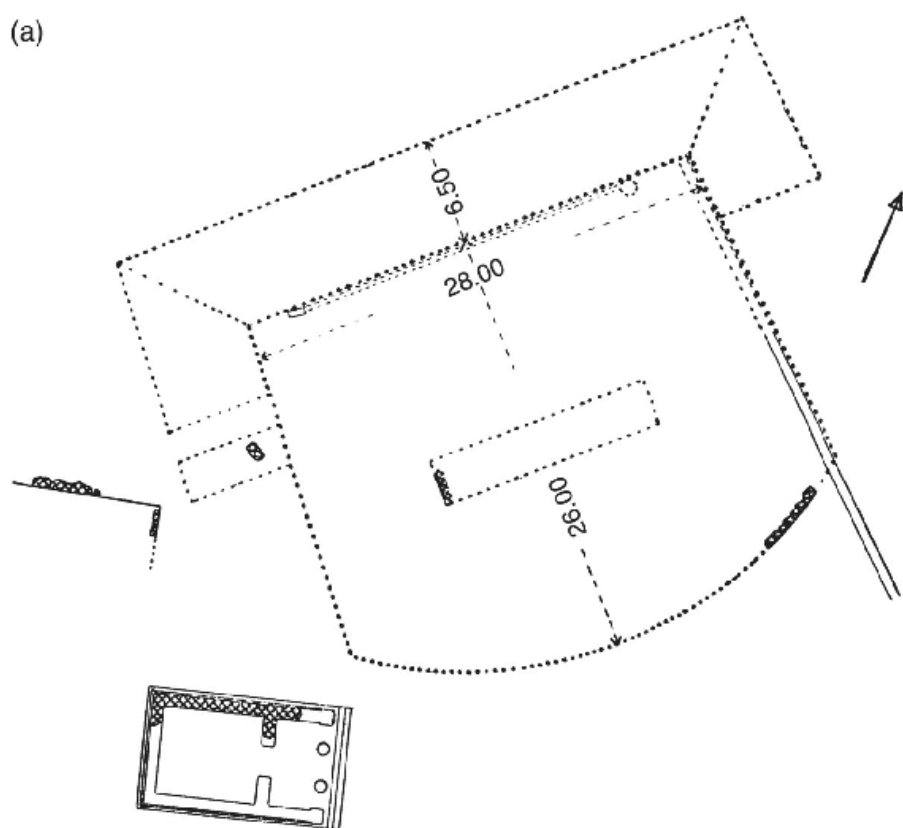
radically sloped and steep cavea ([Figure 25.2](#)), whereas the gradually falling foothills of the Acropolis in Athens lent the theater there a gentler slope and broader cavea ([Figure 25.3](#)). The positioning of the cavea respective to the natural landscape is often considered a hallmark of Greek architectural design, whereby the built structure was adapted or modified in order to present a seamless integration between man-made object and topographic circumstances.



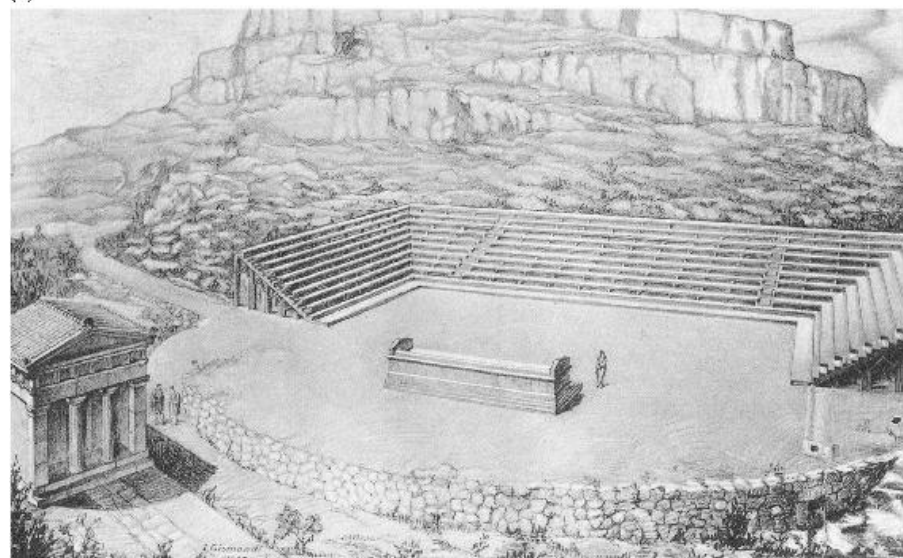
Figure 25.2 Theater, Pergamon, view.

Source: J. Paga.

(a)



(b)



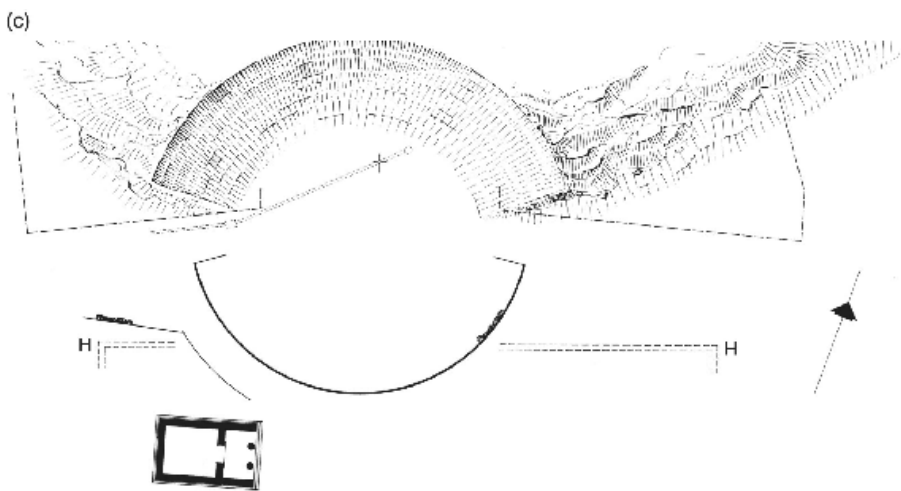


Figure 25.3 Theater of Dionysos, Athens, drawing and reconstruction of first phase with rectilinear orchestra and *cavea* (a–b), drawing of first phase with circular orchestra and *cavea* (c).

Source: a–b: adapted from Anti 1947: fig. 17 (A), pl. II (B); c: Travlos 1980: fig. 677. The Archaeological Society at Athens. Theater of Dionysos, reconstructions of early phase.

The recognizable and repeated hemispherical shape of the theater, the half-round *cavea* oriented around the circular orchestra, is well known and easily identifiable. This form, however, represents an evolution in theater design and does not appear with any regularity until the second half of the fourth century at the earliest. Indeed, since the nineteenth century, there has been much debate on the precise form of the early phases of even one of the most well-known Greek theaters, the Theater of Dionysos in Athens (Dörpfeld and Reisch 1896: 25–36; Fiechter 1935, 1936, 1950; Pickard-Cambridge 1946: 5–15; Dinsmoor 1951; Bieber 1961: 54–57; Gebhard 1974: 428–429, 432–434; Travlos 1980: 537; Rehm 1992: 33; Wiles 1997: 44–50; Paga 2012: 378–391) (Figure 25.3). This continued debate on such a familiar landmark demonstrates precisely how little is actually known about the early development of the Greek theater.

One reason for the controversy is that theaters of the fifth century BCE, particularly the first half of the fifth century, display a greater variety of form and plan than their fourth-century successors. The lack of canonization and the frequently ephemeral nature of the earlier theaters – many of which have been buried or obscured by subsequent expansions and elaborations – have resulted in little concrete information about their sizes and forms. The use of mudbrick and timber for the seats of the *cavea* and the *skene* building has left little positive evidence of their forms and design. Wooden *ikria*, or bleachers, are attested for theaters from as early as the sixth century, and they would have continued in use until the *cavea* was provided with permanent stone seating (Csapo 2007: 98). The altar seems to have been a movable item,

depending on dramatic need; it may not have been a standard part of the theater in all cases (Poe 1989: 117–137). The skene, as will be discussed in greater detail, was highly changeable and would have been built anew every year. As a result, the reconstruction of early theaters, or earlier phases of later theaters, is at times hypothetical and frequently uncertain.

Further complicating analysis of these early theaters is the very terminology that is used. The ancient Greek term “orchestra” (ὄρχηστρα) means “a place for dancing” and it has often been assumed that the dances performed were circular in nature (Hammond 1972: 396–397). A circular dance, however, can be performed in a square or rectangular space; it is not necessary for the geometric arrangement of the dance to correspond to the geometric arrangement of the space within which it is performed. Moreover, the lack of specific evidence for the circularity of these dances (their reconstruction is primarily based on the presence of figures with linked hands encircling Geometric, Proto-Corinthian, and Proto-Attic pottery, and – circular logic at its best – the circular form of the developed Greek orchestra) may lead us to question the absolute certainty with which these early circular dances are posited.

It is also worth noting that the form of the orchestra and the form of the cavea may not necessarily correspond (Wiles 1997: 48). A circular orchestra, for instance, could have an elongated or rectilinear cavea, just as a hemispherical cavea need not conform to a circular orchestra. A consideration of the three parts of the theater as discrete components, rather than as an amalgam, illuminates the functional necessities behind each part, as well as their differences in terms of purpose and individual development. Although the resulting form, brilliantly written into stone at Epidauros, shows an architectural unification of the three parts into a singular whole, examination of earlier theaters betrays their organic development over time (Figure 25.4).

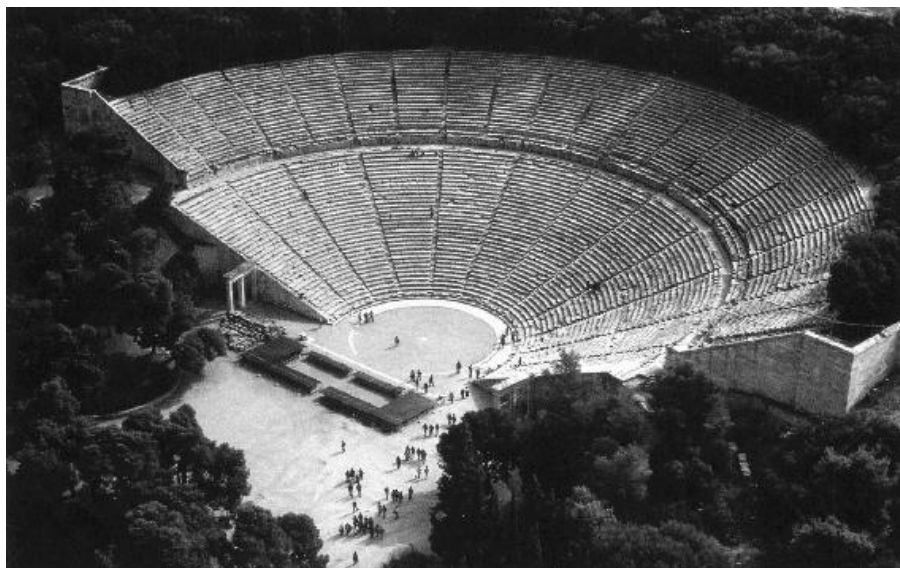


Figure 25.4 Theater, Epidauros, view.

Source: H.R. Goette.

Many of the earlier Greek theaters, the majority from the first half of the fifth century BCE, were rectilinear in plan, although this shape continued into the later fifth and early fourth century as well (Gebhard 1974; Paga 2010: 351–371). These early theaters generally assumed the form of a truncated ellipse or rounded rectangle, although more frequently the shape is not precisely defined. In many cases, the rectilinear reconstruction is based on extant remains of a rectilinear cavea or orchestra, as at Tegea (the remains, now buried, have been dated to the fourth century BCE) and Isthmia (late fifth century BCE), or both, as at Thorikos in Attica (circa 500 BCE) ([Figure 25.5](#)). In other instances, the rectilinear plan is based on the survival of retaining walls, thrones or seats of the *prohedria* (a reserved area for seats of honor), or the general layout of the site, as at Ikaria and Rhamnous in Attica (both circa 500 BCE with later, mid-fifth century phases) ([Figure 25.6](#)). The early theaters at Argos (mid-fifth century) and Syracuse (first half of the fifth century) also had elliptical or rounded rectilinear forms. The first phase of the Theater of Dionysos in Athens was also likely to have been rectilinear (Goette 2007: 116–121; Paga 2012: 381); although arguments for a circular orchestra are adduced by Senseney (2011: 94–95).

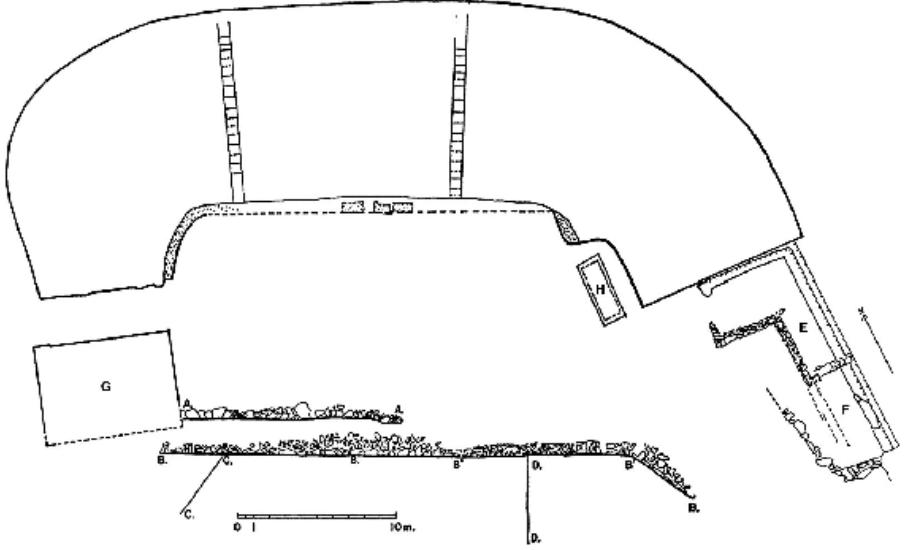


Figure 25.5 Theatral area, Thorikos, plan. A-A. early retaining wall; B, C, and D. later retaining walls; E and F. banquet rooms or changing areas; G. Temple of Dionysos; H. altar.

Source: From Paga 2010: fig. 2; The Trustees of the American School of Classical Studies at Athens.



Figure 25.6 Theatral area, Rhamnous, view of theatral area from cavea, looking south toward prohedria and orchestra.

Source: Paga 2010: fig. 8; The Trustees of the American School of Classical Studies at Athens.

The widespread appearance of the rectilinear form in both the Greek mainland and Sicily over the course of the fifth century indicates that this form – rather than the familiar circular form – was more common in the Classical period and was only gradually displaced in the early Hellenistic period. Possible explanations for the change in form will be discussed, but it is important to note that despite the modification from rectilinear to circular, the three main components – *cavea*, *orchestra*, and *skene* – largely remained intact. The *skene* was witness to embellishment and elaboration in the Hellenistic period, often with the inclusion of a *proskenion* and other elements, seen particularly in the theater at Priene (Figure 25.7), but the overarching layout of the theater form did not fluctuate (von Gerkan 1921; Arnott 1962: 8–20, 42–44).

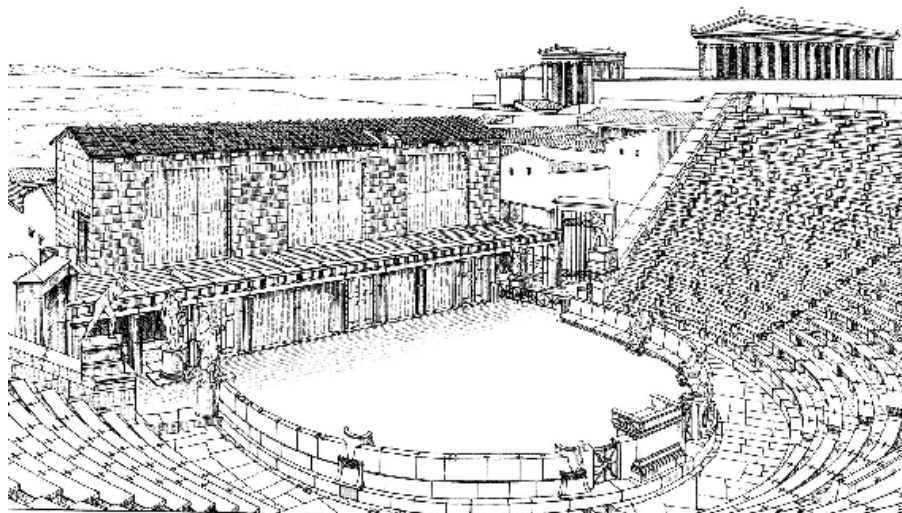


Figure 25.7 Priene, drawing of theater in late second century BCE. .

From von Gerkan 1921, pl. XXXV

This tripartite division of space within the theater created distinct zones of action and activity, physically separating the audience from the performers and establishing interior and exterior settings. At the same time, the juxtaposition of the elevated *cavea* and low, flat *orchestra* created centripetal axes of viewing, directing and focusing the attention of the audience to the central performance area. In this way, the theater engendered its own practice by privileging certain types of viewing and emphasizing the activity that took place in the *orchestra*. The form, whether rectilinear or circular, worked to establish a spatial division between performers and observers while also cultivating a particular mode of viewing. The *orchestra* served as the focal point, the place to which the gaze was directed, and the tiers of seats in the *cavea* accentuated this sight line, downward and inward (Rehm 2002: 37–38; Paga 2010: 367).

The topographic siting of theaters within the landscape frequently aided the

central thrust of the sight lines. The theaters at Epidauros and Pergamon open onto expansive vistas of rolling hills and extensive valleys, respectively. In both instances, the use of the natural hillside and vast natural backdrop encouraged the centripetal focus of the cavea and orchestra, even as the skene blocked certain parts of the vista (it should be noted that the theater at Pergamon never had a permanent skene, potentially suggesting that the view outwards from the theater terrace was considered something not to be blocked, or at least not perpetually blocked). In some respects, the blocked view of the larger landscape helped to fix the gaze of the spectators on the skene or orchestra, further focalizing attention (Rehm 2002: 38). Overall, both the physical layout of the theater and its specific topographic siting facilitated the use of the space and aided in the convergence of viewing axes on the centralized area of the orchestra.

As the examples used thus far indicate, there is no major difference between theaters of the Greek mainland, western colonies in South Italy and Sicily, and areas of Asia Minor. Theaters in these various regions contain the same three elements and tripartite division of space, and they do not vary greatly in terms of size and layout. Circumstances of preservation, however, have meant that the elaborate *skenai* of the Hellenistic period are more often seen in the eastern examples, such as at Priene, Aphrodisias, and Miletos (Figure 25.7). Over the course of the fourth to second centuries, the skene grew both in size and ornamentation. The expansion of the skene laterally through the addition of *paraskenia* often meant that additional doors could be placed in the backdrop, facilitating entrances and exits of characters, while its growth vertically created unique opportunities for multiple tiers of action and greater spatial separation between actors in the orchestra and those in the upper stories of the skene. In addition, a *proskenium* could be added to the front, creating greater room within the skene and permitting the creation of multiple roof levels. These multistoried and expansive skenai were also employed in the Greek mainland and western cities, though, and so are not specific to Asia Minor (see Townsend (1986) for the fourth-century BCE skene of the Theater of Dionysos in Athens; Kowalzig (2008) for the theater at Syracuse).

In addition to the elaboration of the skene during the Hellenistic period, the overall size of theaters increased from the earlier fifth-century examples. The small fourth-century theater at Euonymon (in rural Attica) had a capacity of approximately 2600–3750 (Lohmann 1993: 288), whereas the theater at Pergamon could seat nearly 10 000 spectators. Additional tiers of seats, now rendered in stone instead of timber, were added to the Theater of Dionysos in Athens in the fourth century (Pickard-Cambridge 1946: 138–144). The size differentiation may indicate the growing importance of the theater and increased number of dramatic performances during the Hellenistic period, although it should also be noted that the small deme of Euonymon did not have a population of the same size as the massive capital of the Pergamene

Empire.

The distribution, elaboration, and size of theaters throughout the Greek world indicate their importance within Greek society. The standardization of their architectural form over the course of the fifth and fourth centuries and their carefully orchestrated viewing axes demonstrate the high level of planning in their design. In many respects, the form, plan, and layout of the Greek theater is both reflective of and generative in the role of the theater in Greek society. How, then, were these theaters used?

Function: Use and Purpose

The most straightforward answer to this question of use, is that theaters were venues for dramatic performance. Theaters were, first and foremost, places where tragic and comic plays, as well as dithyrambic poetry, were performed. These performances, moreover, were frequently undertaken as part of religious festivals. There is more evidence, literary, epigraphic, and ceramic, as well as a greater amount of scholarship, concerning the use of the Theater of Dionysos in Athens than any other Greek theater, and so the following discussion of function derives primarily from that venue.

The Athenians celebrated two major festivals to Dionysos that involved dramatic performance: the Lenaia during the month of Gamelion (January) and the City Dionysia, also called the Great Dionysia, in Elaphebolion (late March). Not much is known about the Lenaia, but it seems to have been a more popular venue for comedy than tragedy (Pickard-Cambridge 1968: 25–42). The City Dionysia, on the other hand, was considerably more complex, spanning seven days, and including multiple processions, large sacrifices, and a Panhellenic audience (Pickard-Cambridge 1968: 57–101; Parker 2005: 316–318). Both comic and tragic plays were performed, in addition to dithyramb choruses of men and youths (Pickard-Cambridge 1968: 63–67). The primary venue during the City Dionysia was the Theater of Dionysos and its contiguous Sanctuary of Dionysos Eleutherios. The theater was an integrated part of the sanctuary, and the presence of shrines near other theaters (such as at the deme theaters at Thorikos ([Figure 25.5](#)) and Ikaria) also emphasizes the close links between theatral space and religious space, in addition to the frequent presence of an altar within the theater itself.

In the case of the Theater of Dionysos, prior to the construction of a stone skene in the fourth century, a timber or ephemeral skene would have been erected for the festival each year (Townsend 1986: 434–437). This skene would thus serve as the backdrop for all of the plays performed during the seven days of the festival. It is likely that many other theaters employed a wooden skene prior to the construction of a stone skene, or even exclusively,

as at Pergamon. Pollux (*Onom.* 4.124) and Vitruvius (*De arch.* 5.6.8) both describe three doors in the skene: one central door, being the most important entrance and egress point, and two side doors. Although their evidence is largely derived from later (stone) examples, it is possible that the earlier timber skene also featured one or more doors. The painted decoration on or in front of the skene – the art of *skenographia*, or scene painting, which is posited by some to have been invented by Sophocles (Bieber 1961: 29) – also appears to have been an ephemeral element. These painted panels, called *katablemata* by Pollux (*Onom.* 4.131), could be changed between performances to indicate different settings. Parallel to the paradoi at the theaters at Megalopolis and Messenia are preserved tracks that would have been used for sliding the panels into place, an element referred to as the *scaena ductilis* by Vitruvius (*De arch.* 5.6.8). The built element that housed the tracks and panels was called the *skenotheke*.

The use of additional specialized machinery in the theater, namely the *ekkyklema* and the crane for the flying machine, is attested for the fifth century and was used in conjunction with the ephemeral skene (Bieber 1961: 76–79). The *ekkyklema* was a rolling device that allowed characters to be moved onto and off the stage via a moveable platform (notable examples include Ar. *Ach.* 408; Ar. *Thes.* 996, 265; and Eur. *Hipp.* 810–814). The crane was used to lift actors over or onto the skene, often for *deus ex machina* scenes (notable examples include: Ar. *Eirene* 174–181; Eur. *Med.* 1317–1322; and Eur. *Hipp.* 1284). These specially designed devices and the use of movable scenery made the Classical and Hellenistic theater an adaptive and easily transformable space. The use of ephemera also emphasizes the fact that the theaters were not used regularly or even frequently. In Athens, both the Lenaia and the City Dionysia occurred annually, but neither lasted long: the Lenaia only a few days and the City Dionysia a week at most. In addition, the Rural Dionysia, a local counterpart to the City Dionysia, was celebrated every year during the month of Poseideon (December). This festival, however, seems to have been even more restricted than the Lenaia and City Dionysia, lasting no more than one or two days and being staged in only some demes or villages (Paga 2010: 372–378). Together, these three festivals meant that the theaters in Athens and Attica were in use for approximately three months of the year, but perhaps for a total of only two or three weeks out of those three months. We might imagine similarly brief periods of use and longer periods of disuse for the majority of Greek theaters, at least for dramatic performance or dramatic festivals.

In this way, the built form of the Greek theater was easily adapted and manipulated depending on the circumstances of its construction and use. The specific constraints of the landscape, festival calendar, and population resulted in theaters of differing sizes and capacities and with a mixture of permanent and ephemeral elements. The versatility of the form of the Greek theater

within the basic tripartite schema is possibly one of the reasons for its popularity and widespread replication. The malleability of its form, though, seems to have also had ramifications for its function. As is detailed below, the festivals and dramatic performance were only one possible use of the space, albeit the most noticeable and highly attested. The overarching religious or ritual implications of the theater, however, are worth highlighting and cannot be divorced from the general nature of the theater, regardless of its multiplicity of use. Moreover, the dramatic performances informed the other uses of the space, just as they, in turn, should affect our understanding of the festival use of the space; the relationship was more symbiotic than dialectical.

The ritual dimensions of the City Dionysia and other festivals, in addition to the incorporation of the theater within the precinct of the sanctuary, resulted in a sacralization of the theater space. In other words, the theater, by virtue of its use during the festivals and the presence of a broader sacred precinct, was not a profane or utilitarian structure but rather a specific type of religious building. This transformation, from a site of purely agonistic contestation to ritualized performance, was reinforced by the presence of an altar within the orchestra. The altar, in turn, bestowed divine approval or legitimacy on the dramatic performances themselves. The presence of an altar in many Greek theaters, like the presence of a nearby shrine or temple, underscores this connection between performance and religious festival by physically inserting the religious object *par excellence* into the very design of the theater (Arnott 1962: 43–56; Poe 1989: 137). The reciprocal relationship between the use of the space – as a venue for ritually based performance – and the design of the space – that is to say, the inclusion of an altar – underscores the close connection between form and function in Greek theaters.

The centripetal viewing axes inherent in the architectural layout and design of the theater also enhanced the ritual significance of the space. The spectators were provided with specific sight lines that directed their attention towards the orchestra, where the ritualized performance was taking place. The lowered orchestra, nestled in the foot of the cavea, focalized awareness in the same way a raised *bema*, or platform, might within a flat or level area. This directed emphasis, physically written into the design of the theater, created a cohesive link whereby the theater and festival became inseparable elements. In this light, the skene functioned as a stopping point, where the gaze of the spectators was arrested, the expansive vista beyond cut short (Rehm 2002: 38). This contrast, of directed viewing and stopping point, is similar to the experience one would have had inside a temple, with the cult statue at the far end simultaneously drawing and halting the view down the long cella.

The centralizing focus within the theater, was easily borrowed for different uses of the space. Indeed, the structure of the theater area and its inherent sight lines promoted the use of the space for a wider variety of purposes than dramatic performance. In particular, theaters were frequently the sites for

political meetings and assemblies (Paga 2010: 366–371). They were built structures with large capacities, where the citizen population could meet and discuss business, where information could be communicated and dispersed, and where speeches could be delivered and debate could occur. The small rectilinear theater at Rhamnous, for example (Figure 25.6), was originally considered by excavators to be the bouleuterion of the deme (Bulle 1928: 2), and epigraphic evidence from the area indicates that in antiquity it was considered both the agora and theater of the deme (Petrakos 1999: vol. 1, 89–94; vol. 2, nos. 23, 43, and 73). In this particular case, the theatral area served at least two explicit functions, as the agora for the village and as the theater for celebrations of the Rural Dionysia. The rectilinear form and surrounding buildings, such as the stoa immediately to the south of the “cavea” area, promoted this multiplicity of use.

A recent study of the deme theaters in Attica demonstrates how theatral areas, with both circular and rectilinear orchestras, were used as multipurpose structures that helped promote key democratic tenets, such as communication and intervisibility (Paga 2010: 366–382). The distribution and mixed-use nature of these theatral areas has ramifications for how the Athenian political system was implemented and functioned during the Classical period. By paying greater attention to the variety of purposes to which theaters were put we can arrive at a better understanding of both how these built structures functioned on a more day-to-day basis and how architecture can help elucidate – or complicate – historical vicissitudes.

The political or social use of theaters is not specific to Attica. The Theater of Dionysos in Athens was also the site of political meetings and gatherings, particularly in the fourth century and throughout the Hellenistic period (McDonald 1943: 44–61; Lambert 2008). The large Hellenistic theater at Megalopolis is topographically and architecturally connected to the Thersilion, the structure used for meetings of the Arcadian League. Such a physical connection may imply shared or integrated use. The small fifth-century rectilinear theater at Argos, later converted into the Roman odeion, is likely to have functioned as the primary meeting area for the Argive council prior to the construction of a permanent bouleuterion (Tomlinson 1972: 19). Closer attention to the nuances of use would probably reveal that many Greek theaters, if not the majority of them, were utilized for a wider variety of purposes than the performance of tragic and comic plays.

Nonetheless, it is important to emphasize that Greek theaters were primarily designed as venues for dramatic performance, often in conjunction with a festival or other ritual event. The additional or alternate uses of the space, for political meetings, general gatherings, or even as courts of law, should be considered indications of how the Greeks adapted built structures for a multiplicity of purposes. These uses do not seem to have superseded the performative aspects of the theater but rather provide a model for a lack of

rigidity or strict specificity in how the Greeks conceived of a particular built structure. In addition to their formal design, the combination of permanent and nonpermanent elements in Greek theaters corroborates their selective use as venues for dramatic performance while simultaneously emphasizing their adaptability. When used for nonperformative functions, however, the theater itself could create links between ritual and nonritual or “utilitarian” events. That is to say, the ritualized nature of the theater *qua* theater affected the interpretation and meaning of the space when used for alternate purposes; a political meeting within a theatral area could appropriate the sacred nature of the ritualized theater, just as a dramatic performance was able to co-opt the political legitimacy of the polis by utilizing a shared space.

Economy, Geometry, and Multiplicity: Moving beyond Dramatic Performance

In order to consider theaters as more than simply structures where tragic and comedic plays were performed, more attention should be paid to their multipurpose nature. The very fact that these theatral areas were adaptable encourages a broader approach to their overall significance within Classical and Hellenistic Greek society. The variety of links between form and function, moreover, also sheds light on how some types of architectural structures may not fit into rigorously defined categories. In this final section, new approaches to understanding the Greek theater are presented that consider how these built structures were financed and generated revenue in turn, how their evolving plans illuminate the increasing role of geometry in architectural design, and how various sources, from epigraphy to pottery, can aid our interpretations of the role of the theater in Greek society and can shed light on the built structures themselves.

One of the ways in which theaters can be considered beyond mere venues for performance is in the income-generating possibilities that they posed. Epigraphic evidence regarding *theatropoloi* (“theater sellers”) and *theatronai* (“theater buyers”) indicates that theaters were often objects that could be rented or leased, resulting in revenue generation for the polis (Csapo 2007: 88–96). In an example from Piraeus (*IG* II² 1176 + *SEG* 19.117 + *SEG* 19.521), the *theatrones* paid for the lease of the theater and, in return, was charged with provisioning wooden seats for the spectators (with the exception of the permanent seats in the *prohedria*) and any other alterations necessary, such as changes to the *skene*. The *theatrones* seems to be in charge of any and all of the ephemeral elements connected to the theater. In return, he was allowed to keep any entrance-fee profits or other concessions but was obliged to maintain the condition of the theater. Presumably, admission charges were collected by the polis in cases where the theater was not leased to a private

individual (or individuals, as in the Piraeus example).

As detailed already, the highly ephemeral nature of over two-thirds of classical theaters – both the skene and seats of the cavea were constructed of timber, leaving the orchestra and any necessary retaining walls as the only permanent elements – means that these features are likely to have required repairs or even complete reconstructions on an annual basis. If the polis farmed out contracts for these repairs, the theaters become income-generating venues. If, on the other hand, the polis paid for these repairs, but then charged entrance fees, the theater again accumulated profits into the state treasury. This type of reciprocal relationship between theatrical performance and economic growth has so far only been investigated for theaters in Athens and Attica (Csapo 2007; Wilson 2010), but the implications may be broadly applicable.

Dramatic festivals could also serve as income-generating facets of the theater. The City Dionysia drew a Panhellenic audience, which would have not only increased admission fees but also functioned as a general boon to commercial activity in Athens during the festival, much in the way modern sporting events (particularly the Olympics) often drive revenue production. Moreover, the possibility of yearly contracts for the upkeep and maintenance of the theater may be one of the reasons that few theaters were made permanent in stone prior to the fourth century. General prosperity and economic health may have also functioned as the impetus behind the construction of new theaters during the Hellenistic period. Such seems to have been the case in Sicily (Marconi 2012: 176–189), and it is possible that a similar period of financial burgeoning in Athens around 500 BCE spurred the construction of over four theatral areas in the city and countryside of Attica (Paga 2012: 471–472 (Rhamnous), 496–498 (Thorikos), 513–514 (Piraeus), 525–527 (Ikaria)).

The transition from a rectilinear to circular cavea and orchestra could have also been driven by economic concerns: a semicircular cavea can accommodate a larger capacity than a rectilinear seating area. The expanding size of theaters in the fourth century and Hellenistic period is concomitant with the transition from rectilinear to circular orchestra and cavea. The confluence of these factors points to the second half of the fourth century and Hellenistic period as pivotal moments of transition for the Greek theater, akin to the late Archaic and early Classical period, when the rectilinear and semipermanent theaters began to appear with regularity. An increased interest in geometry and its application to architectural structures (Senseney 2011: 60–103; see also [Chapters 7 and 16](#)) could have also had an influence on the transition to larger spaces as well as on the change from rectilinear to circular. The fourth-century theater at Epidauros illustrates all of these concepts: increased size, circular orchestra and cavea, and the use of geometry in its overall plan and layout ([Figure 25.4](#)).

Ceramic evidence can also provide valuable information about the

architectural layout and design of the Greek theater, as well as its use during dramatic performance. Apulian vases, produced in southern Italy and Sicily during the Classical and early Hellenistic periods, frequently portrayed scenes from tragic and comic plays, often including stage settings and details of costuming and masks (Trendall and Webster 1971: 11–13, with accompanying catalog; now superseded by Taplin 1993 and 2007). In several of these vases, *aedicules*, or shrines, seem to be indicated, which may correspond to particular features of or additions to the skene. The distribution of the majority of these vases in southern Italy and Sicily also provides important information about the spread of tragedy and the role of dramatic performance in areas outside mainland Greece, already by the second half of the fifth century (Taplin 2007: 5–20). Komast vases also provide evidence for costuming and masks and may indicate the early stages of comic and dramatic performance and their accompanying rituals, although these scenes rarely provide evidence of setting (Csapo and Miller 2007: 12–24; Smith 2007; 2010: 242–247).

A small sherd from a *dinos* by the Sophilos painter, dated to circa 570 BCE, depicts spectators seated on *ikria* watching a chariot race (Athens, NM I54999). Although the scene does not represent dramatic performance, the presence of the timber bleachers provides us with an idea of what they originally looked like. (See also [Chapter 24](#).) On the sherd, two stepped *ikria*, each with eight tiers of seats, are placed back to back. The rectilinear shape of these *ikria* demonstrates why the majority of the early theaters were rectilinear in form: if the seats in the cavea were constructed of rectangular timber bleachers, it follows that the general layout of the theater will likewise be rectangular, or at least elliptical in plan. The ceramic evidence in general can serve as a useful barometer for the popularity of the theater, particularly in South Italy and Sicily, but it also demonstrates how architectural idioms and structures were translated onto painted pottery.

The use of epigraphic and ceramic materials to enhance our understanding of both the form and the function(s) of Greek theater provides an indication that there is still much to be discovered and considered about one of the most iconic building types of ancient Greece. The evidence that we can use to arrive at a deeper or more nuanced understanding of the theater is not solely restricted to the archaeological remains or surviving dramatic and comic texts. Investigations into the geometric design and extra-ritual dimensions of the theater may help illuminate why the rectilinear orchestras of early theaters were replaced with circular plans and also help us to understand the wide variety of uses and functions that Greek theaters served. The transition from ephemeral or timber constructions to stone, when combined with the ceramic evidence of southern Italy and Sicily, helps to demonstrate the increasing popularity of theater in the Hellenistic period, but it also has ramifications for the economic value of theaters and their reception (or perception) in other

media. The study of the Greek theater, then, is a multidisciplinary endeavor that stretches across materials and media.

Ultimately, the “iconic” Greek theater should be viewed as a more complex and multifaceted structure than it has previously been considered to be. The fluctuations of its form throughout the Classical period and its multiplicity of uses – ritual, performative, political, economic – illustrate how dynamic the theater can be within the rubric of Greek architecture. In particular, the clear links between form and function transform the theater from a generic or conventional built structure in ancient Greece to a building that can illuminate the vicissitudes of ancient history and shed light on the active properties of architecture within the sociocultural and political sphere of antiquity.

FURTHER READING

Several of the most indispensable works on the Greek theater were written over half a century ago, but they remain both strong starting points and invaluable references for basic terminology. In particular, Pickard-Cambridge 1968 and Bieber 1961 provide excellent overviews of the ritual events that occurred in the Theater of Dionysos in Athens and, respectively, address the general form and dramatic function of theaters. For a recent survey of the epigraphic evidence for dramatic festivals that took place in the Theater of Dionysos, see Millis and Olson 2012. Interest in the spatial dynamics of the Greek theater has been driven largely by phenomenological studies, such as Wiles 1997, Rehm 2002, Paga 2010, and Meineck 2012. The interest in the economics of Greek theaters has been explored by Wilson (2006; 2008; 2010; 2011) and Csapo (2007), both of whom are currently investigating theaters outside Attica. For more on Greek theaters in the fourth century BCE, see the recent volume by Csapo *et al.* (2014), especially on theaters outside of Athens (Moretti 2014). Theaters and theatrical performance in Sicily and southern Italy have always been acknowledged to have been much loved in antiquity, but few attempts have been made to address both the architectural spaces and the festivals or performances themselves. Fortunately, that trend is changing, given the recent studies by Kowalzig (2008), and Marconi (2012). The evidence from images on ceramics for Greek theater has been most fruitfully studied by Taplin, whose bibliography is extensive: *Comic Angels* (1993) and *Pots and Plays* (2007) represent a mere portion.

REFERENCES

- Arnott, P. 1962. *Greek Scenic Conventions in the Fifth Century B.C.* Oxford.

- Bieber, M. 1961. *The History of the Greek and Roman Theater*. 2nd ed. Princeton.
- Bosher, K., ed. 2012. *Theater Outside Athens: Drama in Greek Sicily and South Italy*. Cambridge.
- Bulle, H. 1928. *Untersuchungen an griechische Theatern*. Munich.
- Carter, D., ed. 2011. *Why Athens? Rethinking Tragic Politics*. Oxford.
- Csapo, E. 2007. "The Men Who Built the Theaters: *Theatropolai*, *Theatronai*, and *ArkHITEKTONES*." In Wilson, ed., 87–115.
- Csapo, E. and M.C. Miller, eds. 2007a. *The Origins of Theater in Ancient Greece and Beyond: From Ritual to Drama*. Cambridge.
- Csapo, E. and M.C. Miller. 2007b. "General Introduction." In Csapo and Miller, eds., 1–38.
- Csapo, E., H.R. Goette, J.R. Green, and P. Wilson, eds. 2014. *Greek Theatre in the Fourth Century B.C.* Berlin.
- Dinsmoor, W.B. 1951. "The Athenian Theater of the Fifth Century." In Mylonas, ed., 309–330.
- Dörpfeld, W. and E. Reisch. 1896. *Das griechische Theater*. Athens.
- Fiechter, E. 1935, 1936, 1950. *Das Dionysos-Theater in Athen*. Vols. I–III. Stuttgart.
- Gebhard, E. 1974. "The Form of the Orchestra in the Early Greek Theater." *Hesperia*, 43: 428–440.
- Goette, H.R. 2007. "The Men Who Built the Theaters: *Theatropolai*, *Theatronai*, and *ArkHITEKTONES*; With an Archaeological Appendix." In Wilson, ed., 116–121.
- Hammond, M. 1972. *The City in the Ancient World*. Cambridge, MA.
- Kowalzig, B. 2008. "Nothing to Do with Demeter? Something to Do with Sicily! Theater and Society in the Early Fifth-Century West." In Revermann and Wilson, eds., 128–157.
- Lambert, S.D. 2008. "Polis and Theater in Lykourgan Athens: The Honorific Decrees." In Matthaïou and Polinskaya, eds., 53–85.
- Le Guen, B. ed. 2010. *L'Argent dans les concours du monde grec*. Vincennes.
- Lohmann, H. 1993. *Atene: Forschungen zu Siedlungs- und Wirtschaftsstruktur des klassischen Attika*. Cologne.

Marconi, C. 2012. "Between Performance and Identity: The Social and Cultural Context of Theaters in Late Classical and Hellenistic Sicily." In Bosher, ed., 175–207.

Matthaiou, A.P. and I. Polinskaya, eds. 2008. *Μικρὸς Ἱερομνήμων: Studies in Honor of Michael H. Jameson*. Athens.

McDonald, W.A. 1943. *The Political Meeting Places of the Greeks*. Baltimore.

Meineck, P. 2012. "The Embodied Space: Performance and Visual Cognition at the Fifth Century Athenian Theatre." *NEJC*, 39 (1): 3–46.

Millis, B.W. and S.D. Olson, ed. 2012. *Inscriptional Records for the Dramatic Festivals in Athens: IG II² 2318–2324 and Related Texts*. Leiden.

Moretti, J.-C. 2014. "The Evolution of Theatre Architecture Outside of Athens in the Fourth Century." In Csapo *et al.*, 107–137.

Mylonas, G.E., ed. 1951. *Studies Presented to D.M. Robinson*. Vol. 1. Saint Louis.

Paga, J. 2010. "Deme Theaters in Attica and the Trittys System." *Hesperia*, 79: 351–384.

Paga, J. 2012. "Architectural Agency and the Construction of Athenian Democracy." PhD dissertation, Princeton University.

Parker, R. 2005. *Polytheism and Society at Athens*. Oxford.

Petrakos, V. 1999. *Ο Δήμος του Παμνούντος*. 2 vols. Athens.

Pickard-Cambridge, A.W. 1946. *The Theatre of Dionysus in Athens*. Oxford.

Pickard-Cambridge, A.W. 1968. *The Dramatic Festivals of Athens*, 2nd ed. Oxford.

Poe, J.P. 1989. "The Altar in the Fifth-Century Theater." *ClAnt*, 8: 116–139.

Rehm, R. 1992. *Greek Tragic Theater*. London.

Rehm, R. 2002. *The Play of Space: Spatial Transformation in Greek Tragedy*. Princeton.

Revermann, M. and P. Wilson, eds. 2008. *Performance, Iconography, Reception: Studies in Honor of Oliver Taplin*. Oxford.

Senseney, J.R. 2011. *The Art of Building in the Classical World*:

Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture. New York.

Smith, T.J. 2007. "The Corpus of Komast Vases: From Identity to Exegesis." In Csapo and Miller, eds., 48–76.

Smith, T.J. 2010. *Komast Dancers in Archaic Greek Art*. Oxford.

Taplin, O. 1993. *Comic Angels: And Other Approaches to Greek Tragedy through Vase-Paintings*. Oxford.

Taplin, O. 2007. *Pots and Plays: Interactions between Tragedy and Greek Vase-Paintings of the Fourth Century*. Los Angeles.

Tomlinson, R.A. 1972. *Argos and the Argolid: From the End of the Bronze Age to the Roman Occupation*. Ithaca.

Townsend, R.F. 1986. "The Fourth-Century Skene of the Theater of Dionysos at Athens." *Hesperia*, 55: 421–438.

Travlos, J. 1980. *Pictorial Dictionary of Ancient Athens*. New York.

Trendall, A.D. and T.B.L. Webster. 1971. *Illustrations of Greek Drama*. London.

von Gerkan, A. 1921. *Das Theater von Priene*, München.

Wiles, D. 1997. *Tragedy in Athens: Performative Space and Theatrical Meaning*. Cambridge.

Wilson, P. 2006. "Choruses for Sale in Thorikos? A Speculative Note on *SEG* 34, 107." *ZPE*, 161: 125–132.

Wilson, P., ed. 2007. *The Greek Theater and Festivals: Documentary Studies*. Oxford.

Wilson, P. 2008. "Costing the Dionysia." In Revermann and Wilson, eds., 88–127.

Wilson, P. 2010. "How did the Athenian Demes Fund their Theater?" In Le Guen, ed., 37–82.

Wilson, P. 2011. "The Glue of Democracy? Tragedy, Democracy, Structure and Finance." In Carter, ed., 18–43.

CHAPTER 26

Commemorating the Dead: Grave Markers, Tombs, and Tomb Paintings, 400–30 BCE

Olga Palagia

This chapter offers a survey of the principal types of grave markers and tombs in the late Classical and Hellenistic periods. Some, such as grave reliefs, columns, and statues, are carried over from the Archaic and Classical periods, though there was a ban on luxurious grave markers in Athens and Attica from circa 480 to circa 430, and after 317 BCE. Peribolos tombs in Athens and cist tombs in Macedonia first appear in the fifth century. Painted chamber tombs were known in Anatolia in the Archaic period (Mellink 1998). The fourth century introduces a great range of chamber tombs, including the spectacular underground Macedonian tombs with wall-paintings, which begin after Alexander the Great's conquest of Asia, and temple tombs on huge pedestals with vast amounts of sculptural decoration sponsored by the local dynasts of the western satrapies of the Persian Empire, such as the Mausoleum at Halikarnassos, which was designed by the famous architect Pytheos.

Grave Markers

Reliefs

Marble grave reliefs are the most common type of grave markers in the late Classical and Hellenistic periods. They were normally set up in funerary precincts that lined the roads outside the city gates. Large quantities of reliefs from Athens and Attica of the fourth century survive. They were banned by an anti-luxury decree imposed by Demetrios of Phaleron in 317 BCE and reappeared as late as the reign of Augustus in the first century. They consist of relief slabs set in architectural frames, which were often topped by pediments. The names of the deceased and other members of their family are usually inscribed on the architrave. The scale of stelai ranges from modest to colossal, becoming larger and more elaborate as the fourth century progressed. Low relief stelai also tend to develop into high relief towards the end of the fourth

century. Their quality varies from fine art works to second-rate products. The famous fourth-century sculptor Praxiteles was credited with a sculptured grave monument of a soldier leading his horse that was erected in the Athenian Kerameikos (Paus. 1.2.3). It is not clear, however, if this was a stele or a free-standing sculpture.

The iconography of grave reliefs is confined to mundane scenes like family gatherings or more modest combinations of master/mistress and household slave. No gods are represented except for Hermes leading the souls to the Underworld. Handshakes symbolize close family ties. Pets may appear in the gravestones of children. The dead were characterized visually as warriors, priests, athletes, hunters, or housewives. The heads are idealized with no attempts at portraiture. The stelai are dominated by human figures, sometimes with the addition of chairs or stools. Landscape elements are rare. Family scenes include the dead, as well as the living, and it is sometimes hard to distinguish them. A good case in point is the late fourth-century grave relief of Hiero and Lysippe from Rhamnous (Athens NM 833 and Rhamnous storeroom; Kaltsas 2002: no. 409; Clairmont 1993: no. 2.480). Hiero is a mature man shaking the hand of a young woman (Lysippe). He touches his chin with his left hand, a gesture of grief. The young woman used to be interpreted as the deceased daughter of Hiero until the architectural frame of the relief came to light, bearing an inscription naming Hiero as the dead man and Lysippe as his wife. Another interesting case is the two nearly identical gravestones of the sisters Demetria and Pamphile, for each of whom a stone was erected at the Athenian Kerameikos following her death (Athens NM 2708 and Kerameikos Museum).

In Boeotia and West Greece, fourth-century and Hellenistic gravestones developed in a different direction. They were tall limestone slabs topped by pediments. Their decoration consisted of horizontal bands, e.g., a Doric frieze of triglyphs and metopes or an Ionic frieze of dentils, plus relief friezes of animals or florals. The name of the deceased acquired decorative value as it formed part of this pattern.

In the Hellenistic period grave reliefs were mass produced on the islands of the Aegean and in the cities of East Greece, picking up the thread of Attic grave reliefs. They are smaller in scale and introduce new themes, as well as a new system of proportions, with slaves portrayed on a smaller scale than their masters. In addition, there is greater variety in architectural frames, including the arch, which is inscribed within the rectangular field of the stele. The attributes of the deceased, such as weapons or baskets, for example, can be shown in the background. The frequent depiction of herms may signpost the gates of Hades, while book rolls can be interpreted as sacred texts related to mystery cults (Palagia 1997: 69–70). Book rolls are sometimes taken to denote philosophers, but, in some cases, they are even held by infants (Palagia 2008: 201). Funerary banquets, a subject that was common in votive reliefs to

heroes in the fourth century, become widespread in Hellenistic grave reliefs. One of the finest examples comes from Cyzicus, and dates from the mid-second century (Paris Louvre Ma 2854; Pfuhl and Möbius 1977–1979: 2.382–383, no. 1555, pl. 225). The deceased Attalus reclines on a couch feeding a snake out of his phiale. His wife sits beside him holding a fan, while a diminutive female slave proffers a model of the Rotunda of Arsinoë on Samothrace, suggesting that the deceased was an initiate of the mysteries of the Great Gods. A basket is set on a base behind her. A slave boy serves wine from a krater at the right, while the forepart of a horse emerges from the architectural frame. A series of nails in the background must have held various attributes. The heads of the two principal figures were made separately and attached into cavities, although this does not necessarily mean that the heads were portraits.

Painted stelai

The most extensive collections of painted funerary stelai come from the Athenian Kerameikos, Demetrias, Vergina, and Chersonnesos. A fine Athenian example of the fourth century represents a loutrophoros in relief, painted with a handshake scene between a man and a woman (Munich Glyptothek; Posamentir 2006: no. 53). A painted ribbon hangs from the loutrophoros handle, while book rolls are painted in the background of the stele, along with alabastra; all can be understood as grave goods. The book rolls probably refer to sacred texts related to mystery cults which offered hopes for the afterlife.

Statues

Statues of auxiliary figures such as slaves, archers, or sirens accompanied grave reliefs on the funerary precincts of Athens and Attica throughout the fourth century. In addition, statues of the deceased with their slaves, echoing the iconography of grave reliefs, were occasionally placed in temple-like structures. These lasted from about 340 BCE until they were banned by Demetrios of Phaleron's anti-luxury decree of circa 317 BCE. Extant examples represent women with their maids or men with slave boys. All are headless, but there is no reason to believe that the heads were portraits. It is more likely that they had idealized features following the conventions of grave reliefs.

The best preserved example is the Kallithea Monument (Piraeus Museum 4502; Steinhauer 2001: 305–309, figs. 458–465) ([Figure 26.1](#)). It was erected outside the long walls leading from Athens to Piraeus by a wealthy family of

metics from Istria (modern Romania). This monument is a paradigm of conspicuous consumption, emulating the dynastic burials of Lycia and Caria (see, later in the chapter, Nereid Monument and Mausoleum). Even though the workmanship is not of the highest quality, it does not fail to impress on account of its size and complexity. A tall limestone podium supports a stepped marble pedestal on which rests an Ionic naiskos containing the marble statues of Nikeratos, his son Polyxenos, and a slave boy. The back wall of the naiskos is made of grey Hymettian marble. The father is represented as a citizen wearing a himation, the son as a naked athlete, with his cloak thrown over the slave's shoulder. The stepped pedestal carries an Amazonomachy frieze with an animal frieze directly under the naiskos. The now plain band in the middle may have carried a painted frieze. In addition to the marble polychromy, there are vestiges of paint on the figures, as well as painted moldings.



Figure 26.1 Kallithea Monument, third quarter of the fourth century BCE, Piraeus Museum.

Source: Olga Palagia.

Grave statues were also erected in the Hellenistic cemeteries of the islands of the Aegean and East Greece. A number of unfinished grave statues have come to light in the sculptural workshops of Rheneia (Couilloud 1974: 231–233).

Statues of animals placed on tombs or on funerary precincts are known from the sixth century BCE onwards. They functioned as guardians or served as symbols of the life and occupations of the deceased. Lions, dogs, bulls, leopards, and eagles are common in the fourth century, with lions continuing through the Hellenistic period. One of the most famous lions was erected on the tomb of Leonidas at Thermopylai (Hdt. 7.225; Clairmont 1983: 114–115). A colossal marble lion was set up on the mass grave of the Sacred Band of Thebes who fell at the Battle of Chaironeia in 338 BCE ([Figure 26.2](#)). The lion should probably date from after the refoundation of Thebes in 316 BCE and can be compared to a similar, probably contemporary lion at Amphipolis (Ma 2008). A Greek lion at Ecbatana marks the grave of one of Alexander the Great's companions, perhaps Parmenio (Palagia 2012: 370–371, fig. 1). A colossal marble lion sits on top of a tomb at Knidos, which was inspired by the Mausoleum at Halikarnassos but appears to function as a pedestal for the lion (Waywell 1998). An eagle is recorded as marking the grave of Plato in Athens (*Anth. Pal.* 7.62). A colossal marble eagle with a snake in its claws came to light in a cemetery near Piraeus and has been tentatively attributed to the tomb of a seer (Steinhauer 2001: 279, fig. 418).



Figure 26.2 Lion of Chaeroneia on modern pedestal, after 316 BCE.

Source: Olga Palagia.

Vases in stone

Oversized marble vessels functioned as grave markers primarily in fourth-century Athens and Attica. They are not hollow; rather, they are monumental representations of specific vessel-shapes normally made of clay but sometimes of metal. We have large numbers of lekythoi representing the perfume bottles that were deposited in tombs. Marble lekythoi were occasionally decorated with relief panels. The most famous marble lekythos comes from the tomb of Lysis, Socrates' friend, who was celebrated in the homonymous Platonic dialogue (Piraeus Museum 3281; Stroud 1984). Loutrophoroi, vessels for fetching bath water, occasionally marked the graves of those who died unmarried (Dem. 44.18). Marble cauldrons are less common. Marble Panathenaic amphoras very likely marked the graves of Athenians who had served their city in some political capacity.

Columns and pilasters

Ionic or Doric columns could function as tomb markers, usually supporting a marble statue or a vase. A column with a siren was placed on the tomb of Isocrates (d. 338 BCE) at Kynosarges in Attica (Plut. *Mor.* 838c; Scholl 1994: 240–252). Sirens as musicians playing dirges tend to appear as akroteria on Attic grave reliefs or as funerary statues. Columns supporting Panathenaic amphoras are illustrated as grave markers on two sides of the grave pillar of Metrodoros from Chios in the early third century (Berlin Antikenmuseum Sk 766a; Bentz 2009: figs. 15.5–6). Columns supporting cauldrons and placed on mounds are represented in a horse race in honor of the dead taking place among the tombs, which is painted inside the early Hellenistic Tomb of the Philosophers at Pella (Lilimpaki-Akamati 2007: 63–66, fig. 52). In the fourth century an archaic Ionic column carrying a now lost sphinx (?) was inscribed by Dokimos with a dedicatory epigram and placed on the tomb of the seventh-century poet Archilochos on Paros, who was worshipped as a hero (Clay 2004: 28–29, pls. 1–2) ([Figure 26.3](#)). The second-century tomb of the sculptor Damophon at Messene included a Doric column inscribed with copies of honorary decrees issued by various cities thanking Damophon for his benefactions (Themelis 2000: 92–94).



Figure 26.3 Inscribed Ionic capital from column placed on the tomb of Archilochos on Paros. The capital dates from the sixth century, the inscription from the fourth BCE. Paros Museum.

Source: Olga Palagia.

Trapezai

A *trapeza* is a long low block with a flat top, often carrying relief scenes. Although its name means “table,” it need not have functioned as a platform for funeral offerings. The most famous trapeza stood on the tomb of Isocrates at Kynosargesdiolkos, representing Isocrates and his teachers, including the sophist Gorgias gazing at a globe (Plut. *Mor.* 838b–d; Scholl 1994: 240–252). A similar theme may appear on one of the blocks of a marble relief trapeza of the fourth century BCE that was found reused in a late Roman house on the south slope of the Acropolis. The dead man appears on all three sides. He is among his family on two sides and placed in a group of men who look like philosophers on the front face (Athens AM; Brouskari 2002: 143–148).

Sarcophagi

Marble sarcophagi were normally placed in crypts or buried underground. Some, however, functioned as tomb markers, especially on the islands of the Aegean. Hellenistic sarcophagi, mainly on Paros and Rheneia, carried busts or stelai added on top, with the finest example being the second-century sarcophagus of Tertia Horaria from Rheneia (Mykonos Museum and Rheneia, *in situ*; Couilloud 1974: no. 58, pls. 13, 93) (Figure 26.4). The name of the deceased is inscribed on the long side, accompanied by a wool basket in relief. The lid takes the form of a roof with tiles. A stele framed by Corinthian columns supporting an architrave, dentils, and a floral acroterion is inserted on top. The relief shows the deceased, seated, shaking hands with her husband, and attended by a diminutive slave girl. The small scale of the girl indicates

status rather than age, as is usual in Hellenistic grave reliefs.

Altars

Cylindrical or rectangular altars decorated with garlands and boukrania, occasionally with the addition of standing figures or snakes, were a common category of grave markers, especially in East Greece and the islands of the Aegean. A special category of round altars on the island of Rheneia carry rectangular cuttings on top, indicating that they served as bases for funerary stelai.

Cinerary caskets

Round or rectangular stone caskets could be placed on graves, holding lead boxes with cremation burials (Couilloud 1974: 486–487; Fraser 1977: 12–13).

Tombs and Tomb Paintings

Peribolos Tombs

Burial precincts were common in Athens and Attica in the fifth and fourth centuries BCE. Enclosures were built on all sides, containing sarcophagi and other burials. The wall lining the road was built of fine ashlar masonry and topped by grave markers in the form of grave reliefs, stelai, or marble vases. An exceptional grave monument in the Athenian Kerameikos, the so-called Tomb at Horos 3, combines a pi-shaped precinct with a circular building in the middle (Willemsen 1977: 140–151; Koenigs, Knigge, Mallwitz 1980: 99–125; Valavanis 1999). Only half of the monument has been recovered, containing a single male burial in a poros sarcophagus. We do not know if there was another burial in the missing portion of the monument. The two wings of the precinct were topped by marble statues of dogs, while a marble Panathenaic amphora crowned the circular building. A marble cauldron with handles in the form of griffin heads was also part of the monument. The Panathenaic amphora and the tomb's proximity to the *demosion sema* suggest a state burial of an exceptional individual or individuals. The dates proposed for the tomb range from the end of the fifth century to the third quarter of the fourth century BCE. The nearest parallel is provided by a similar monument of the early Hellenistic period in Megara, considered to be a heroön (Travlos

Funerary naiskoi

This type of tomb was common in the cemeteries of Taras in the period 325–250 BCE, dated by pottery contexts. Limestone naiskoi, usually of the Corinthian order, were embellished with sculptured friezes, metopes, pedimental relief figures, and akroteria (Klumbach 1937; Carter 1975). The scenes depicted can be mythological (e.g., Trojan War, Amazonomachies), religious (e.g., rape of Persephone, Dionysiac thiasos, Underworld), or battle-pieces, hunts, banquets, and episodes by the graveside. These tombs were small-scale, but they were occasionally large enough to house statues similar to the funerary naiskoi shown in Apulian vase-painting of the last quarter of the fourth century.

A funerary naiskos carrying a marble relief frieze can be reconstructed on Rhodes on the evidence of a frieze block commemorating Hieronymos of Tlos, dating from the late third or early second century BCE (Berlin Antikenmuseum Sk 1888; Fraser 1977: 34–36, fig. 97; Palagia 2011a: 483 n. 21 with earlier references). The frieze is exceptionally signed by the sculptor Demetrios and divided into two parts. More blocks would have completed the scene on either side. A reading of sacred texts relating to the afterlife is represented on the left, while the rest of the frieze is located in Hades. The terrestrial scene is separated from the Underworld by means of a vertical pillar. From left to right, we see Hermes standing in front of Persephone, who is followed by Pluto, enthroned. The dead Hieronymos stands behind Pluto. The scene on the right comprises the souls of the departed sitting among the reeds on the banks of the Acheron River (cf., Paus. 10.28.1). A winged woman and a female figure rising from the ground, perhaps personifications, complete the scene at the extreme right.



Figure 26.4 Funerary stele of Tertia Horaria from Rheneia, Mykonos Museum. Second century BCE.

Source: Olga Palagia.

Temple tombs with funerary crypts

This tomb type developed in the hellenized western satrapies of the Persian Empire, Caria and Lycia in particular, in the fourth century, and became popular in the Greek world in the Hellenistic period. Only a few significant examples will be discussed here.

The Nereid Monument was the tomb of Arbinas, dynast of Xanthos, Lycia, datable to circa 380–370 BCE (see [Figure 30.2](#)). It is an Ionic temple raised on a high podium, built entirely of marble and lavishly decorated with architectural sculptures (London, British Museum). The workmanship is Greek, adapted to local taste. A frieze on the architrave represents a multiple quarry hunt evoking Persian hunts in game parks; there are also single combat scenes that may represent funeral games, as well as a procession of men carrying offerings. Another frieze running around the exterior wall of the cella depicts a banquet, where the dynast reclines in splendid isolation, and a sacrificial scene, perhaps offered to the deceased as hero. The pediments are decorated with relief scenes showing the dynast and his family in front and in heroic combat at the rear. Sculptured akroteria decorate the corners of the roof. Statues of so-called Nereids (who may be Lycian water nymphs) stand in the intercolumniations ([Figure 26.5](#)). The podium is decorated with two superimposed friezes, the upper frieze depicting a series of city sieges, which are presumably celebrating Arbinas' conquests of neighboring cities, while the bottom frieze represents a generalized battle among Greeks. It is remarkable that most of the figures represented are in Greek rather than Persian dress. Arbinas, on the other hand, is distinguished by his Oriental appearance. He chose, however, to have himself represented in a hellenized ambience.

The Mausoleum at Halikarnassos was directly inspired by the Nereid Monument, with additional features evoking the pyramids of Egypt and Greek family statue groups (see [Chapter 30](#) and [Figures 30.1, 30.3](#)). It was commissioned by Mausolus, satrap of Caria, in the second quarter of the fourth century BCE and became one of the most influential funerary monuments of all time (much of it now in London, British Museum). According to Pliny (*NH* 36.4.30–31) and Vitruvius (*De arch.* 2.8.11–12; 7.praef.12–13), the Mausoleum was designed by the architect Pytheos and the sculptor Satyros, who also co-authored a book about it. It consisted of a podium supporting an Ionic temple, which was topped by a stepped pyramid. Mausolus' burial chamber was in an underground crypt. A four-horse chariot stood on top of the monument, perhaps carrying a statue of Mausolus. The marble horses were encased in lead, which was probably gilded. The main claim to fame of Mausolus' tomb rested on the great quantity and high quality of marble statuary that was created by the famous Greek sculptors Scopas,

Timotheos, Leochares, and Bryaxis. A variety of white marbles (e.g., Parian, Pentelic, Proconnesian) and colored limestones were used for the sculptures and in the fabric of the building.

Pytheos was also responsible for the Temple of Athena at Priene, which was sponsored by Alexander the Great, and was an advocate of the Ionic style in Greek architecture. He introduced sculptured ceiling coffers to the peristyle of the Mausoleum, an experiment that was repeated in his Athena Temple at Priene and imitated in other monumental tombs like Belevi (discussed next). The pyramid of the Mausoleum was decorated with statues of lions and figural akroteria, perhaps including a statue of Apollo, who is the only Greek god featured in the Mausoleum. The pedestal of the chariot carried a relief frieze with a centauromachy, while a frieze with a chariot race (illustrating funeral games) probably ran around the exterior wall of the cella. The top of the podium was decorated with an Amazonomachy frieze. Free-standing sculptures of various sizes represented battles of Greeks and Persians, a hunt, a sacrifice, and members of Mausolus' family. The distribution of statues on the building remains controversial, while the attribution to individual sculptors is a futile exercise. The style of both sculpture and architecture is purely Greek, and the Carian aristocracy is portrayed as hellenized barbarians. The general impression of the Mausoleum would have been as a petrified funeral pyre (cf., Palagia 2000: 175); its purpose was to glorify Mausolus as a founder hero of Halikarnassos.

The Mausoleum at Belevi near Ephesos was a dynastic burial, commissioned by one of the Successors of Alexander (now in the Ephesos and Izmir Museums). It was inspired by the Mausoleum of Halikarnassos, offering a new blend of Greek and Persian elements. Its podium is partly carved out of the living rock and contains a vaulted funerary chamber and an antechamber comparable to the interiors of Macedonian tombs (see the discussion of underground built chamber tombs). The stone sarcophagus represents a Greek kline, but the footstool has Achaemenid-style legs. A man wearing a Macedonian short-sleeved chiton reclines on the lid, accompanied by the statue of a Persian attendant. The podium has a false door and was topped by a temple-like structure with Corinthian columns. The peristyle carried sculptured ceiling coffers modeled on those of the Mausoleum, showing funeral games on the north side, a centauromachy on the others. Funeral games were common in the funerary iconography of not only the Macedonians but also the satrapal courts of Asia Minor (e.g., Nereid Monument, Mausoleum). The interior walls of the cella were articulated with engaged columns or pilasters. The entablature of the Corinthian colonnade carried pairs of Achaemenid lion-griffins flanking cinerary urns, with horses serving as corner akroteria. It may well be that the monument was topped by a stepped pyramid modeled on the Mausoleum. It is generally thought that the tomb was prepared for Lysimachos, but he was never buried in it; it probably

housed the remains of Antiochos II, who died in Ephesos in 246 BCE.

The third-century Charmyleion on the island of Kos comprised a temenos, a garden, and a two-storied house tomb with a vaulted underground crypt ([Figure 26.6](#)), which functioned as a family mausoleum (Scholl 1994: 261–266). The dead were deposited in six loculi, sealed with slabs representing the short end of a kline. Charmylos had a hero cult in association with the twelve gods, as attested by an inscription found nearby.



Figure 26.5 Statue of Nereid from the Nereid Monument of Xanthos. Early fourth century BCE. London, British Museum.

Source: Olga Palagia.

Chamber tombs

A number of chamber tombs, cut into the bedrock, each containing several burials, were exceptionally erected within the walls of Messene in the Hellenistic and Roman periods (Themelis 2000).

Underground built chamber tombs

Macedonian tombs are built of soft limestone decorated with plaster, with their entrance often sealed with marble doors. Their materials are brittle, and they have no architectural merit except for the painted or relief decoration. They are distinguished by a barrel-vault roof; several are embellished with an architectural façade, probably imitating a palatial gateway, which does not reflect the structure behind it. The façades carry half-columns or pilasters and can be topped by a pediment and akroteria. Two-storied façades include elements of both the Doric and Ionic orders combined in non-canonical ways. Interiors too could be painted and architecturally articulated, for example, the burial chamber of the Judgment Tomb at Lefkadia and the antechamber of a tomb at Dion (Miller 1982: figs. 10, 25). The back wall of the main chamber of the so-called Tomb of Eurydice at Vergina is exceptionally decorated like a tomb façade to compensate for the fact that the tomb is encased in ashlar masonry to protect it from desecration. The lack of architectural facades also applies to a number of tombs of the third and second century BCE, such as the Tomb of Lyson and Kallikles at Lefkadia, and Pella Tomb VI (Chrysostomou 1999). It may imply that the owners did not wish to attract attention to the contents of these tombs in a time of uncertainty.

Most Macedonian tombs are covered with a mound and are accessible through a built corridor (*dromos*), though the so-called Tombs of Rhomaïos and Eurydice near the palace of Vergina show no evidence of mounds (Miller 1993: 4 n. 10). Many tombs functioned as family mausolea, the most prominent example being the Tomb of Lyson and Kallikles at Lefkadia, which contains 22 niches for the storage of cremation burials, remaining in use from the third to the second centuries BCE. Even the so-called Tomb of Philip (Vergina Tomb II) remained accessible to the family, as is indicated by the opening mechanisms of the marble doors leading to the chamber and antechamber (Phaklaris 2011: 361–362). Since no two façades are alike, it is reasonable to assume that they remained visible with the painted decoration exposed to the elements. This is certainly true of the painted façades of the underground rock-cut chamber tombs of Alexandria, which were never covered by mounds.

Macedonian tombs housed elite burials. They sometimes preserve stone furniture, such as klinai, benches, and chests. Selected tombs at Vergina were

also furnished with marble thrones, the significance of which remains under discussion. Marble furniture could be painted, the finest examples being the throne of the so-called Tomb of Eurydice and the kline of Potidaia (Thessaloniki Museum), which was painted in imitation of a gold and ivory couch. Fragments of actual gold and ivory klinai have come to light in just over forty tombs.

Several Macedonian tombs are decorated with figural wall-paintings on the façade or within the chambers. The façade and burial chamber of Vergina Tomb III exceptionally carried painted friezes on wooden panels. The funerary paintings of Macedonia either reflect the religious beliefs of the Macedonians or reproduce funerary furnishings, battles, weapons, and court scenes. Painted canopies and rugs can also be found on ceilings and walls (Tomb of Lyson and Kallikles at Lefkadia, Dion Tomb I: Miller 1993: col. pl. Vb; Boardman 2000: fig. 5.88a). Religious scenes involve judgments in the Underworld (e.g., Judgment Tomb and Tomb of the Palmettes, both at Lefkadia). Court scenes include a royal hunt in Vergina Tomb II and a royal banquet in the Tomb of Agios Athanasios, which has painted sentries on either side of the entrance, probably an allusion to real soldiers guarding the tomb (Tsimbidou-Avloniti 2005). Funeral games (i.e., a chariot race) are painted in the antechamber of Vergina Tomb III. Funerary paraphernalia are illustrated in the Tomb of Phoinikas, while battle scenes can be found on the façade of the Judgment Tomb; weapons are painted on the walls of the Tombs of Lyson and Kallikles and of Agios Athanasios, among others. The altar and perirrhanterion painted in the antechamber of the Tomb of Lyson and Kallikles may allude to the paraphernalia of cult employed in funerary rites.

The chronology of Macedonian tombs has been skewed on account of the controversy regarding the date of the earliest known example, the so-called Tomb of Philip at Vergina, which has been attributed to either Philip II (d. 336 BCE) or his son, Philip III Arrhidaios (d. 317, buried 316 BCE) (Philip III: Borza and Palagia 2007; Philip II: Lane Fox 2011b). The so-called tomb of Eurydice cannot predate Vergina Tomb II, despite assertions to the contrary (Palagia forthcoming). Macedonian tombs came to an end after the dissolution of the Macedonian kingdom in 168 BCE.

The diffusion of Macedonian tombs in areas under Macedonian influence, such as Epirus, Thessaly, Aetolia, Acarnania, and Euboea, is widespread in the third and second centuries BCE. Among the finest examples are the Tomb of the Erotes at Eretria and the so-called heroön at Calydon. The Tomb of the Erotes carried a tomb marker on top of its mound, along with an abundance of marble funerary furniture with painted wreaths and weapons on the walls. The heroön of Calydon is accessible via a built *dromos*, roofed with a barrel-vault, even though it was not covered by a mound. It is furnished with two stone couches in the main chamber. In the Roman Imperial period it was reused and fitted with an overground palaestra (Charatzopoulou 2006).

The Alabaster Tomb in Alexandria is the only example of a Macedonian tomb in Egypt known to-date, constructed entirely of huge alabaster blocks. It originally consisted of a chamber and antechamber, roofed by flat beams and decorated with a temple-like façade. Its association with the royal cemetery that contained the second tomb of Alexander the Great is entirely conjectural (Adriani 2000). Alexander's third and final tomb, constructed by Ptolemy IV within the royal compound, may now lie underwater, as Ptolemaic royal burials were on the waterfront of Alexandria (Plut. *Ant.* 86; Fraser 1972: 16).

Cist tombs are rectangular chambers built of ashlar blocks with a flat stone roof reinforced by wooden beams underneath. These tombs had no façade but were accessible through the roof. The earliest known in Macedonia are attested in Aiani in the fifth century BCE and were complemented by overground temple-like structures for the performance of funerary rites. The interior walls were plastered and occasionally painted with figural decoration. An exceptional cist tomb in Katerini consists of a chamber and antechamber communicating with a marble door. The walls of the antechamber are decorated with painted shields.

The most spectacularly painted cist tombs depict eschatological subjects. The wall-paintings of the fourth-century BCE Vergina Tomb I show the rape of Persephone, with Demeter and the three Fates seated on adjacent walls. A fourth-century female tomb at Aineia shows wreaths, boxes, headscarves, ribbons, and other paraphernalia painted as if hanging from the walls. The third-century Tomb of the Philosophers at Pella is decorated with male figures reading from book rolls, one of them pointing at a globe, which may be interpreted as an initiation scene (Palagia 2011a: 483–484). Funeral games are painted on a narrow frieze above the main figural panels.



Figure 26.6 Vaulted crypt under the chamber tomb of Charmylos, Kos, third century BCE.

Source: Olga Palagia.

Rock-cut chamber tombs in Macedonia date primarily from about 300 to the second half of the second century BCE and consist of one or two chambers that can be reached via a *dromos*. The façades are normally decorated with simple pilasters. An exceptional tomb of seven chambers opening off a corridor, accessed by a stairway, with two grave stelai and an altar above, recently came to light at Pella (Lilimpaki-Akamati 2008). It functioned as a family mausoleum from about 300 to the second half of the second century BCE and may be a predecessor of the elaborate rock-cut chamber tombs of Alexandria, which are not attested before the third century. These were not covered by mounds but were often arranged around a peristyle court open to the sky. They were accessible via a covered stairway, and the entrances to the burial chambers were articulated by means of architectural façades of half-columns or pilasters supporting entablatures, sometimes also with painted panels of figural decoration. The burial chambers contained stone klinai and/or loculi for depositing the dead. The slabs sealing the loculi had doors, windows, or garden gates painted on them. Some klinai had painted canopies over them. The extensive tomb complexes later became virtual catacombs used throughout the Roman Imperial period. The painted façades of these courtyard tombs were exposed to the elements. This same treatment of the

façade also applied to the painted panel over the central doorway of the south façade of the third-century Moustapha Pasha Tomb I (Venit 2002: 55–58, fig. 42). It represents three Macedonian horsemen (two wearing kausias) and two women pouring libations around an altar. This may be an allusion to the funeral rites that took place at the actual altar in the courtyard, though it is hard to imagine that visitors to the tombs would ride down the steps to the courtyard. The horsemen may allude to the deceased in a heroised capacity.

A rock-cut tomb similar to those of Alexandria is the third-century BCE Swing Tomb of Cyrene, which is decorated with painted metopes on the façade representing scenes from the life of the deceased as well as a passage to the Underworld in Charon's boat (Rouveret 2004: 93–126).

Early Hellenistic rock-cut chamber tombs in the Greek cities of South Italy have elements in common with Macedonian tombs, especially the so-called Ipogeo Cristallini in Naples. The upper chamber was possibly used for funerary rites, while the funerary crypt is covered by a barrel-vault. Its interior walls are articulated with pilasters and decorated with painted garlands. A relief gorgoneion decorates the back wall of the crypt. Candelabra are painted at either side of the entrance, while a golden phiale is painted as if suspended from the wall. These paintings obviously allude to actual grave goods. The stone sarcophagi resemble the klinai of Macedonian tombs, but there is no evidence of Macedonian influence. This type of tomb developed independently in the Naples area (Steingraber 2000: pls. 16.4, 19.4, 23.1, 29.3, 34.1–2, 37.1, 38.1, 41.1–2; Baldassare *et al.* 2002: 50–54).

Rupestrial tombs (cut into the rock-face)

The Macedonian Alketas, younger brother of Perdikkas and a relation of Alexander the Great, died at Termessos, Lycia, in 319 BCE during the wars of the Successors. He was buried by the citizens of Termessos in a rock-cut tomb following Lycian custom. His sarcophagus was placed under a rock-cut canopy topped by the heraldic design of an eagle with a snake in its claws as a portent of victory (Hom. *Il.* 12.200–207). To the left of the sarcophagus three ossuaries were carved out of the rock in the form of a pair of houses and a throne, while to the right a relief assemblage comprises a small round table flanked by vessels, all being symposium paraphernalia. A rock-cut panel set at a right angle to the front face of the tomb depicts Alketas on horseback, with his armor and weapons shown as if hanging from the wall (Pekridou 1986).

Lighthouse tombs

A three-tiered tower tomb built above an underground crypt in a Ptolemaic

cemetery at Taposiris Magna, and inspired by the Lighthouse of Alexandria, consists of a rectangular podium topped by an octagonal tower with a cylindrical top (McKenzie 2007: fig. 50). This comes at the beginning of a series of tombs drawing on the lighthouse.

FURTHER READING

Useful compendia of tombs and tomb markers can be found in Kurtz and Boardman 1971 and Fedak 1990. Marble and limestone grave reliefs of the fourth century and the Hellenistic period are collected by Fraser and Rönne (1957), Couilloud (1974), Fraser (1977), Pfuhl and Möbius (1977–1979), Schmidt (1991), and Clairmont (1993). For funerary statues of the fourth century, see Scholl 2001; Despinis 2002; of the Hellenistic period, see Couilloud 1974: 231–233. For animals on tombs, see Woysch-Méautis 1982 and Palagia 2011b. Most recently, Grossman (2013) has published the Classical, Hellenistic, and Roman funerary sculpture of the Athenian Agora.

Arvanitopoulos 1928, Saatsoglou-Paliadeli 1984, Rouveret 2004, and Posamentir 2006 and 2011 concentrate on painted gravestones. Marble funerary vessels mainly of the fourth century are discussed by Schmaltz (1970), Kokula (1984), and Valavanis (2000; 2001). Round funerary altars of the Hellenistic period are collected by Fraser (1977: 25–33), Berges (1986; 1996) and von Moock (2004). For rectangular altars, see Fraser 1977: 13–25. For columns and pillars supporting funerary monuments, see Clay 2004 and Bentz 2009.

For Tarentine naiskoi, see Klumbach 1937 and Carter 1975. For the Nereid Monument, see Jenkins 2006: 186–202. For recent discussions of the Mausoleum of Halikarnassos, see Jeppesen 2002 and Jenkins 2006: 203–227 and 2010. The Belevi Mausoleum is published by Praschniker and Theuer (1979). See also Barringer 2008: 171–202 for more on these funerary monuments in Asia Minor, especially in the commemoration of an individual ruler.

Rock-cut chamber tombs in Macedonia are published by Lilimpaki-Akamati (1994; 2008). Venit 2002 is an up-to-date monograph on the tombs of Alexandria. Von Mangoldt 2012 is the most comprehensive monograph on Macedonian tombs to date, but useful accounts can also be found in Miller 1982 and 1993 and in Ginouvès 1994, while Rhomiopoulou and Schmidt-Dounas 2010 provides a gazetteer. Macedonian tombs outside Macedonia are collected by Huguenot (2008) and von Mangoldt (2012). On the furniture of Macedonian tombs, see Sismanidis 1997 and Andrianou 2009. The only gold and ivory kline published so far comes from the Tomb of the Palmettes and is now in the Athens National Museum (Rhomiopoulou and Schmidt-Dounas

2010: 87–98). The gold and ivory klinai from the chamber and antechamber of Vergina Tomb II have been reconstructed and are on display in the Museum of the Royal Tombs at Vergina. For more on klinai in the Archaic, Classical, and Hellenistic Mediterranean world, see Baughan 2013. A monograph on Macedonian painting is in preparation by the author; for a preliminary account, see Palagia 2011a. For cist tombs in Macedonia, see Despoini 1980, Vokotopoulou 1990, Andronikos 1994, and Karamitrou-Mentesidi 2008.

REFERENCES

- Adriani, A. 2000. *La tomba di Alessandro*. Rome.
- Andrianou, D. 2009. *The Furniture and Furnishings of Ancient Greek Houses and Tombs*. Cambridge.
- Andronikos, M. 1994. *Vergina II. The Tomb of Persephone*. Athens.
- Arvanitopoulos, A.S. 1928. *Γραπταί στήλαι Δημητριάδος-Παγασών*. Athens.
- Baldassare, I., A. Pontradolfo, A. Rouveret, and M. Salvadori. 2002. *Pittura romana*. Milan.
- Barringer, J.M. 2008. *Art, Myth, and Ritual in Classical Greece*. Cambridge.
- Barr-Sharrar, B. and E.N. Borza, ed. 1982. *Macedonia and Greece in Late Classical and Early Hellenistic Times*. Studies in the History of Art 10. Washington, DC.
- Baughan, E.P. 2013. *Couched in Death: Klinai and Identity in Anatolia and Beyond*. Madison, WI.
- Bentz, M. 2009. "The Reception of Architectural Sculpture in Two-Dimensional Art." In Schultz and von den Hoff, eds., 188–197.
- Bentz, M. and N. Eschbach, eds. 2001. *Panathenaïka*. Symposium zu den Panathenaïschen Preisamphoren. Mainz.
- Berges, D. 1986. *Hellenistische Rundaltäre Kleinasiens*. Freiburg.
- Berges, D. 1996. *Rundaltäre aus Kos und Rhodos*. Berlin.
- Boardman, J. 2000. *Persia and the West*. London.
- Borza, E.N. and O. Palagia. 2007. "The Chronology of the Macedonian Royal Tombs at Vergina." *JDAI*, 122: 81–125.

Bosworth, A.B. and E.J. Baynham, eds. 2000. *Alexander the Great in Fact and Fiction*. Oxford.

Brouskari, M. 2002. *Οι ανασκαφές νοτίως της Ακροπόλεως: Τα γλυπτά*. *Archaïologike Ephemeris* 141. Athens.

Carter, J.C. 1975. *The Sculpture of Taras*. Philadelphia.

Charatzopoulou, C. 2006. "L'Heroon de Kalydon revisitée." In Hatzopoulos and Morizot, eds., 63–88.

Chrysostomou, P. 1999. "Ο Μακεδονικός τάφος Στ' με τις σαρκοφάγους της Πέλλας." *Ancient Macedonia*, 6: 282–306.

Clairmont, C.W. 1983. *Patrios Nomos: Public Burial in Athens during the Fifth and Fourth Centuries B.C. The Archaeological, Epigraphic-literary, and Historic Evidence, Vol. I*. Oxford.

Clairmont, C.W. 1993. *Classical Attic Tombstones*. Kilchberg.

Clay, D. 2004. *Archilochos Heros*. Cambridge, MA.

Couilloud, M.-T. 1974. *Délos XXX: Les monuments funéraires de Rhénée*. Paris.

Damaskos, D., ed. 2002. *Αρχαία ελληνική γλυπτική: Αφιέρωμα στη μνήμη του γλύπτη Στέλιου Τριάντη. Μουσείο Μπενάκη, 1^ο Παράρτημα*. Athens.

Despinis, G. 2002. "Αττικοί επιτύμβιοι ναῖσκοι του 4^{ου} αι. π.Χ. με αγάλματα: μια πρώτη προσέγγιση." In Damaskos, ed., 209–231.

Despoini, K. 1980. "Ο τάφος της Κατερίνης." *Athens Annals of Archaeology*, 13: 198–209.

Erskine, A., L. Llewellyn-Jones, and S. Wallace, eds. Forthcoming. *The Hellenistic Court*. Swansea

Fedak, J. 1990. *Monumental Tombs of the Hellenistic Age*. Toronto.

Fraser, P.M. 1972. *Ptolemaic Alexandria I*. Oxford.

Fraser, P.M. 1977. *Rhodian Funerary Monuments*. Oxford.

Fraser, P.M. and T. Rönne. 1957. *Boeotian and West Greek Tombstones*. Lund.

Ginouvès, R. 1994. *Macedonia*. Princeton.

Grossman, J.B. 2013. *Funerary Sculpture*. Athenian Agora 35. Princeton.

Hatzopoulos, M.B. and Y. Morizot, eds. 2006. *Roīs, cités, necropoles*. Athens.

Howe, T. and J. Reames, eds. 2008. *Macedonian Legacies: Studies in Ancient Macedonian History and Culture in Honor of Eugene N. Borza*. Claremont.

Huguenot, C. 2008. *Eretria XIX: La tombe aux Erotes et la tombe d'Amarynthos*. Lausanne.

Jenkins, I. 2006. *Greek Architecture and its Sculpture in the British Museum*. London.

Jenkins, I. 2010. "The Mausolea of Halicarnassus." In Macfarlane and Morgan, eds., 121–135.

Jenkins, I. and G.B. Waywell, eds. 1997. *Sculptors and Sculpture of Caria and the Dodecanese*. London.

Jeppesen, K. 2002. *The Maussolleion at Halikarnassos 5: The Superstructure*. Højbjerg.

Kaltsas, N. 2002. *Sculptures in the National Archaeological Museum, Athens*. Los Angeles.

Karamitrou-Mentesidi, G. 2008. *Αιανή: Αρχαιολογικοί χώροι και Μουσείο*. Aiane.

Klumbach, H. 1937. *Tarentiner Grabkunst*. Reutlingen.

Koenigs, W., U. Knigge, A. Mallwitz. 1980. *Kerameikos XII: Rundbauten im Kerameikos*. Berlin.

Kokula, G. 1984. *Marmorlutrophoren. MDAI(A)*, Beiheft 10. Berlin.

Kurtz, D. and J. Boardman. 1971. *Greek Burial Customs*. London.

Lane Fox, R., ed. 2011a. *Brill's Companion to Ancient Macedon*. Leiden.

Lane Fox, R. 2011b. "Introduction: Dating the Royal Tombs at Vergina." In Lane Fox, ed., 1–34.

Lilimpaki-Akamati, M. 1994. *Λαξευτοί θαλαμωτοί τάφοι της Πέλλας*. Athens.

Lilimpaki-Akamati, M. 2007. *Πέλλης 1: Κιβωτιόσχημος τάφος με ζωγραφική διακόσμηση από την Πέλλα*. Thessaloniki.

Lilimpaki-Akamati, M. 2008. *Πέλλης 2: Ο Πολυθάλαμος τάφος της Πέλλας*. Thessaloniki.

- Ma, J. 2008. "Chaironeia 338: Topographies of Commemoration." *JHS*, 128: 72–91.
- Macfarlane, F. and C. Morgan, eds. 2010. *Exploring Ancient Sculpture, Essays in honour of Geoffrey Waywell*. BICS, Suppl. 194. London.
- McKenzie, J. 2007. *The Architecture of Alexandria and Egypt 300 BC – AD 700*. New Haven.
- Mellink, M.J. 1998. *Kizilbel: An Archaic Painted Tomb Chamber in Northern Lycia*. Philadelphia.
- Miller, S.G. 1982. "Macedonian Tombs: Their Architecture and Architectural Decoration." In Barr-Sharrar and Borza, ed., 152–171.
- Miller, S.G. 1993. *The Tomb of Lyson and Kallikles: A Painted Macedonian Tomb*. Mainz.
- Palagia, O. 1997. "Initiates in the Underworld." In Jenkins and Waywell, eds., 68–73.
- Palagia, O. 2000. "Hephaestion's Pyre and the Royal Hunt of Alexander." In Bosworth and Baynham, eds., 167–206.
- Palagia, O. 2008. "The Grave Relief of Adea, Daughter of Cassander and Cynnana." In Howe and Reames, eds., 195–214.
- Palagia, O. 2011a. "Hellenistic Art." In Lane Fox, ed., 477–493.
- Palagia, O. 2011b. "An Unfinished Molossian Hound from the Dionysos Quarry on Mount Pentelicon." *Marmora*, 7: 11–17.
- Palagia, O. 2012. "The Impact of Alexander the Great in the Art of Central Asia." In Stoneman, Erikson, and Netton, 369–382.
- Palagia, O. Forthcoming. "The Royal Court in Ancient Macedonia: the Evidence from Tombs." In Erskine, Llewellyn-Jones, and Wallace, eds.
- Palagia, O. and W. Coulson, eds. 1998. *Regional Schools in Hellenistic Sculpture*. Oxford.
- Pekridou, A. 1986. *Das Alketas-Grab in Termessos*. *MDAI(I)*, Beiheft 32. Tübingen.
- Pfuhl, E. and Möbius, H. 1977–1979. *Die ostgriechischen Grabreliefs*. Mainz.
- Phaklaris, P. 2011. "Και άλλα προβλήματα του Τάφου II της Βεργίνας: το μέγεθος και οι φάσεις κατασκευής του." In Valavanis, ed., 345–368.
- Posamentir, R. 2006. *Bemalte attische Grabstelen klassischer Zeit*.

Munich.

Posamentir, R. 2011. *The Polychrome Grave Stelai from the Early Hellenistic Necropolis*. Chersonesan Studies I. Austin.

Praschniker, C. and M. Theuer. 1979. *Forschungen in Ephesos VI: Das Mausoleum von Belevi*. Vienna.

Rhomiopoulou, K. and B. Schmidt-Dounas. 2010. *Das Palmettengrab in Lefkadia. MDAI(I)*, Beiheft 21. Mainz.

Rouveret, A. 2004. *Peintures grecques antiques: La collection hellénistique du musée du Louvre*. Paris.

Saatsoglou-Paliadeli, C. 1984. *Τα επιτάφια μνημεία από τη Μεγάλη Τούμπα της Βεργίνας*. Thessaloniki.

Schmaltz, B. 1970. *Untersuchungen zu den attischen Marmorlekythen*. Berlin.

Schmidt, S. 1991. *Hellenistische Grabreliefs*. Cologne.

Scholl, A. 1994. “Πολυτάλαντα μνημεία: Zur literarischen und monumentalen Überlieferung aufwendiger Grabmäler im spatklassischen Athen.” *JDAI*, 109: 239–271.

Scholl, A. 2001. “Der ‘Perser’ und die ‘skythischen Bogenschützen’ aus dem Kerameikos.” *JDAI*, 115: 79–112.

Schultz, P. and R. von den Hoff, eds. 2009. *Structure, Image, Ornament: Architectural Sculpture in the Greek World*. Oxford.

Sismanidis, K. 1997. *Κλινες και κλινοειδείς κατασκευές των Μακεδονικών τάφων*. Athens.

Steingräber, S. 2000. *Arpi –Apulien –Makedonien: Studien zum unteritalischen Grabwesen in hellenistischer Zeit*. Mainz.

Steinhauer, G. 2001. *Το Αρχαιολογικό Μουσείο Πειραιώς*. Athens.

Stoneman, R., J. Erikson, and I. Netton, eds. 2012. *The Alexander Romance in Persia and the East*. Groningen.

Stroud, R.S. 1984. “The Gravestone of Socrates’ Friend Lysis.” *Hesperia*, 53: 355–360.

Themelis, P. 2000. *Ηρώες και ηρώα στη Μεσσήνη*. Athens.

Travlos, J. 1988. *Bildlexikon zur Topographie des Antiken Attika*. Tübingen.

Tsimbidou-Avloniti, M. 2005. *Μακεδονικοί τάφοι στον Φοίνικα και στον Άγιο Αθανάσιο Θεσσαλονίκης*. Athens.

Valavanis, P. 1999. “‘Das stolze runde Denkmal.’ Bemerkungen zum Grabmonument am dritten Horos.” *MDAI(A)*, 114: 185–205.

Valavanis, P. 2000. “Thoughts on the Marble Panathenaic Amphorae from Marathon.” *Eirene*, 36: 89–97.

Valavanis, P. 2001. “Panathenäische Amphoren auf Monumenten spätklassischer, hellenistischer und römischer Zeit.” In Bentz and Eschbach, eds., 161–173.

Valavanis, P., ed. 2011. *Ταξιδεύοντας στην κλασική Ελλάδα, Τόμος προς τιμήν του καθηγητή Πέτρου Θέμελη*. Athens.

Venit, M.S. 2002. *Monumental Tombs of Ancient Alexandria*. Cambridge.

Vokotopoulou, I. 1990. *Οι ταφικοί τύμβοι της Αίλειας*. Athens.

von Mangoldt, H. 2012. *Makedonische Grabarchitektur*. Berlin.

von Moock, D.W. 2004. “Delische Roundaltäre.” *MDAI(A)*, 119: 373–390.

Waywell, G.B. 1998. “The Lion from the Lion Tomb at Cnidus.” in Palagia and Coulson, eds., 235–241.

Willemsen, F. 1977. “Zu den Lakedämoniergräbern in Kerameikos.” *MDAI(A)*, 92: 117–157.

Woysch-Méautis, D. 1982. *La Représentation des animaux et des êtres fabuleux sur les monuments funéraires grecs*. Lausanne.

PART IV
Reception

CHAPTER 27

The Spread of Greek Architecture: Labraunda

Gretchen Umholtz

In the second quarter of the fourth century BCE, the Carian dynast Maussollos, son of Hekatomnos (377–353 BCE), and his brother and successor, Idrieus (351–344 BCE), carried out a vigorous and highly original building program at the Sanctuary of Zeus at Labraunda in Asia Minor. Within a period of about thirty years, at least eight buildings were constructed or remodeled, and the direct responsibility of the dynasts for these structures was advertised in prominent dedicatory inscriptions on at least six of these buildings. The sanctuary has been excavated (although not yet fully) by Swedish archaeologists, initially in 1948–1953 and 1960, resuming in 1988–1993, and now continuing since 2002. Decades of lively, wide-ranging scholarship have illuminated countless aspects of the impact and significance of the site and its architecture. At Labraunda, the spread of Greek architecture and its transformation went hand in hand.

Many innovative or unusual features are worthy of note in the design of individual buildings at Labraunda, but it is their effect as a group that truly sets this site apart. Opportunities for such intensive and trail-blazing use of architectural ensembles to define and celebrate communal identity and power were rare in the ancient Greek world. The unique political circumstances and distinctively original architectural achievement at Labraunda make the Hekatomnid development of the site comparable, although on a smaller scale, to the Periclean building program on the Athenian Acropolis and the Attalid development of the acropolis at Pergamon. In many ways, the architecture of Labraunda can be viewed as a kind of bridge or transition between the Classical and Hellenistic periods, but it is first and foremost an eloquent expression of the unique character and potential of one special place at a definitive point in its history.

Pre-Hekatomnid Caria

The cultural and political characteristics of Caria, like those of other regions in western Anatolia, were strongly shaped by the interactions of local traditions with those of larger, and often more powerful, neighboring cultural

entities: the Persian Empire to the east and the Greek world to the west. Throughout the Archaic period, Carians had extensive contact with Ionian Greeks, both at home and abroad, and Carian soldiers were highly regarded as mercenaries. Greek-style architecture was well represented at many Carian sites, including at Labraunda. With most of the rest of western Asia Minor, Caria came under Persian control shortly after the Persian king Cyrus' capture of the Lydian capital, Sardis, in 547 BCE. With relatively limited exceptions, Caria remained a part of the Persian Empire for more than two hundred years, until the conquests of Alexander the Great brought that empire to its end. Over the course of these two centuries, Persian influence in Carian material culture did not displace, or even come close to rivaling, the prevalence of Greek traditions, but Persian elements came to form a valuable part of elite self-expression in Caria as in many other parts of the empire. The Hekatomnids foreshadowed developments of the Hellenistic period with their tremendous skill in exploiting the strengths, potentials, and interplay of all three components of Carian cultural heritage and relationships: Anatolian, Greek, and Persian.

Pre-Hekatomnid Labraunda

Labraunda lies in western Caria, about 25 km inland from the Aegean coast and 14 km northeast of Mylasa, ancestral home of the Hekatomnid dynasty. The Sanctuary of Zeus Labraundos is set on the southern slope of a hill whose most prominent natural feature is a split, rocky outcrop with a spring at its base (Figure 27.1). This spring is abundant enough, even in modern times, that wetness has limited archaeological exploration of the earliest levels nearby, but rock-cut steps and channels at the outcrop fit the pattern of rock-cut shrines typical of many parts of Anatolia in the Geometric period. By the end of the Archaic period, a narrow terrace below the rocky outcrop was adorned with a modest temple, probably distyle in antis. Herodotus (5.119.2) mentions a sanctuary of Zeus Stratios and a great grove of plane trees at Labraunda, where Carian forces gathered to take counsel and regroup between two hard-fought, but unsuccessful, battles against the Persians during the Ionian revolt, circa 495 BCE. Archaeological remains that are probably attributable to the Archaic period include a wall of polygonal masonry, about 20 m long, which may have been a terrace-retaining wall, the foundations of the distyle in antis temple (later reused for the cella of the Hekatomnid structure), and fragments of various white marble architectural elements. These include the bottom drum of a column with 36 flutes (diameter 0.70 m), a small fragment of column necking at similar scale, two groups of large dentil blocks, and eight fragments of a large egg-and-dart crowning molding, all of which appear to date from the late sixth or early fifth century and may

have belonged to the Archaic temple; an Ionic column capital at smaller scale than the other elements may have crowned a votive column (Baran 2009: 301–304).

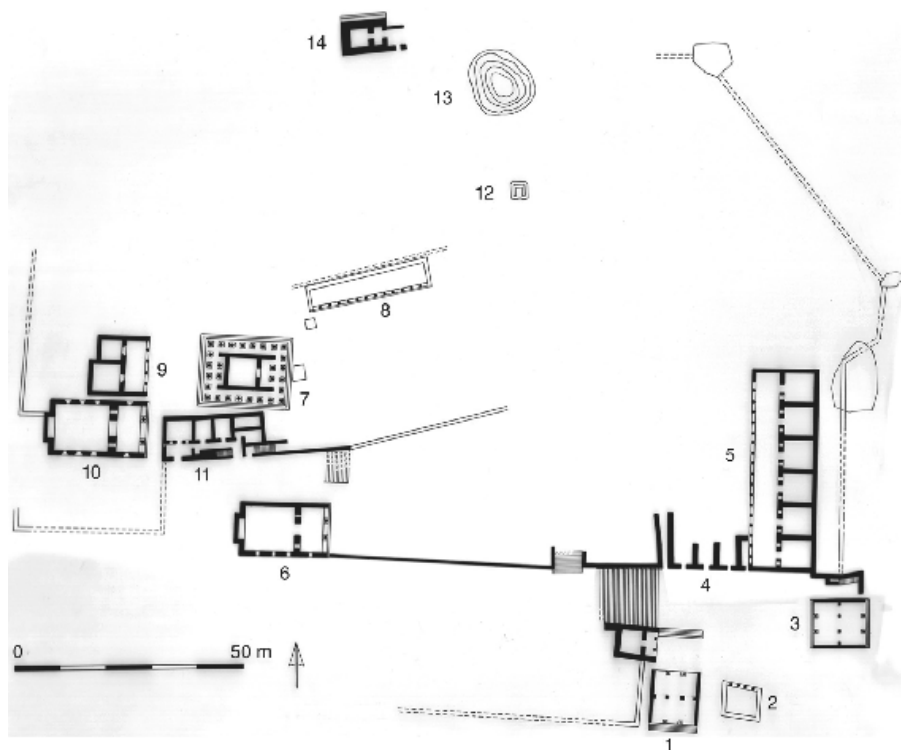


Figure 27.1 Sanctuary of Zeus, Labraunda, hypothetical restored view in the late fourth century BCE. 1. South Propylon; 2. Doric Building; 3. East Propylon; 4. Magazine Building; 5. East Stoa; 6. Andron B; 7. Temple of Zeus; 8. North Stoa; 9. Oikoi; 10. Andron A; 11. Terrace Building; 12. Spring House; 13. Rock-cut Sanctuary; 14. Built Tomb.

Source: C.S. Alexander, adapted from plans in Westholm 1963 and Hellström 2007.

Abundant pottery, including Attic black-figure, attests to the use of the sanctuary in the Archaic period, but there seems to have been a significant drop in activity for much of the fifth century BCE. Pottery, including Attic red-figure, again becomes abundant at the end of the century, marking the beginning of the resurgence that would ultimately culminate in the Hekatomnid building program (Hellström and Thieme 1982: 42).

Hekatomnid Caria

When the Persian king Artaxerxes II made Caria a separate satrapy (detaching

it from Lydia) and appointed Hekatomnos, son of Hyssaldomos, as satrap, probably in 392/1 BCE, he was breaking with what had previously been a well-established pattern of Iranians filling satrapal posts in western Asia Minor. Hekatomnos may already have been serving as a subordinate official (*hyparch*) under Tissaphernes and have established a strong record as an effective local leader who had given good service in the past (Ruzicka 1992: 18–19). His family seems to have come originally from the town of Kindya, further to the southwest, but to have held a leading position in Mylasa for at least part of the fifth century, and maybe as far back as the aftermath of the Ionian Revolt (Ruzicka 1992: 15–16). Hekatomnos' interest in and promotion of local cults is attested both in dedicatory inscriptions and in his coinage. An extant inscription at Sinuri records his dedication of an offering table, and he should probably be credited also with at least some of the early fourth-century renovation of that site, which included a new terrace wall, Doric stoa, altar, and perhaps temple, as well (Ruzicka 1992: 30–31). At Labraunda, part of a statue base found just northeast of the temple is inscribed on its front face with the name Hekatomnos, son of Hyssaldomos, presumably as dedicator of the statue, perhaps of Zeus. Hekatomnos and his successors also issued coins featuring Zeus Labraundos, equipped with his characteristic double-axe (Hornblower 1982: 340).

Hekatomnos' son Maussollos succeeded him as satrap in 377 BCE and ruled until his death in 353. Maussollos was succeeded by his wife and sister, Artemisia, then, upon her death in 351 by their brother Idrieus. When Idrieus died in 344, he was succeeded by his sister–wife, Ada, who ruled for four years before being driven into exile by their youngest brother, Pixodaros. Ada was ultimately restored to power by Alexander the Great in 334. For both Maussollos and Idrieus, the Sanctuary of Zeus at Labraunda was an extremely important focus of architectural development and benefaction. Each of them dedicated unique and innovative buildings at the site, and together they developed a regional cult place that exemplified and celebrated Carian identity in a more ambitious and cosmopolitan manner than had ever been done before.

The Hekatomnid Sanctuary at Labraunda

The organization of the site achieved under the Hekatomnids persisted with relatively few additions and modifications throughout the Roman period. The sanctuary is arranged on a series of terraces, supported by tall and handsome retaining walls of gneiss ashlars (Figure 27.1 and Figure 27.2). The largest and longest of these walls (not included in Figures 27.1 and 27.2) is located to the south of the sanctuary, running just above (to the north of) the paved road coming from the west, from Mylasa. This southernmost wall created a large

level area where people could gather or processions marshal before entering the sanctuary proper. New excavations are revealing a monumental fountain house, entirely of gneiss and perhaps of Hekatomnid date, that would have welcomed and refreshed worshipers gathering here (DiFabio and Waters 2015).

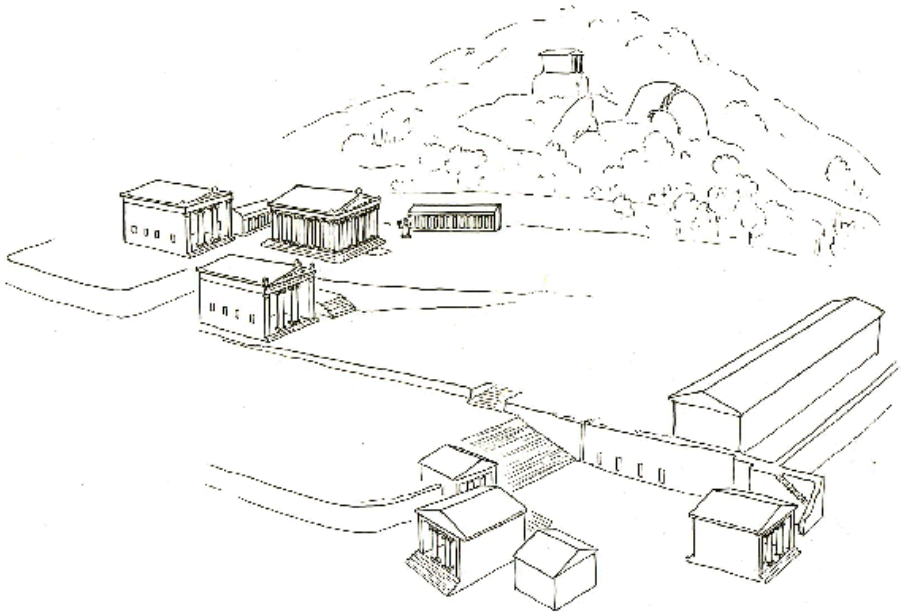


Figure 27.2 Sanctuary of Zeus, Labraunda, hypothetical restored view in the late fourth century BCE.

Source: C.S. Alexander.

The sanctuary was entered at the southeast corner where one propylon (Ionic, distyle in antis) monumentalized access from the south and another almost identical structure marked the entrance from the east. Together with a small, north-facing fountain or well house (Doric, tetrastyle in antis) these propyla define the south and east sides of a large, open space, roughly 20×35 m in area. This open area is closed on the north by the imposing ashlar retaining wall of the terrace above, pierced by at least three doorways giving access to rectangular rooms behind (not fully excavated). Motion through the area led from the propyla at east and south up a grand, monumental staircase, 12 m wide, rising to the west. At the top of this grand staircase another, smaller one led, at a right angle, northward up the short remaining rise to the terrace that formed the middle level of the sanctuary.

This “middle” terrace is widest at its eastern end, where it was closed by a large, westward facing stoa where dining could be accommodated in six rooms along the back (each with room for 11 couches), and quite possibly in the deep colonnaded front half of the building as well. At its narrower, western end, the terrace is dominated by Andron B. This monumental, almost

temple-like building (distyle in antis) was dedicated by Maussollos and also accommodated ritual dining, but in the grandest style possible.

In the fourth century, the Temple Terrace, the uppermost level of the sanctuary proper, was expanded southward to a width of almost 30 m, creating a broader open area in front (i.e., to the east) of the temple. The Archaic temple was enlarged and equipped with an Ionic peristyle of 6×8 columns, and the space in front of the temple was defined on the north by a long stoa dedicated by Maussollos. At the northeastern end of the terrace are foundations of a large two-roomed building of uncertain date that may have been a well house of some kind. The terrace was probably entered from its eastern end, which apparently did not extend as far east as the middle terrace, below.

The space behind (i.e., to the west of) the temple was enhanced by two buildings, side by side with façades aligned and facing eastward towards the temple: the Doric Oikoi building and Andron A, the former certainly and the latter very probably dedicated by Idrieus, who is also named as dedicator of the temple. Andron A, a slightly larger and better built version of Andron B on the terrace below, is extremely prominent both in its scale (slightly taller than the temple) and in its position at the extreme southwest corner of the Temple Terrace. In front of Andron A was an open paved area that ran above a set of subterranean rooms that opened onto the space to the northwest of Andron B on the terrace below.

A number of significant points emerge from this overview of the layout of Hekatomnid Labraunda. First, it is clear that considerable skill and attention were devoted to creating impressive and well-defined spaces on each of the rising levels of the sanctuary: at the entry level (framed by Propyla, Doric Building, terrace wall, and Monumental Staircase), on the second terrace (the larger area framed by the East Stoa and Andron B), and on the Temple Terrace itself, with the North Stoa and Building A defining the area to the east of the temple and Andron A and the Oikoi building defining a smaller area to the west. Secondly, we see a fairly ambitious use of terracing, not only to define the landscape and create appropriate spaces for building and assembly but also to win additional usable space through the construction of subterranean rooms within the terrace itself, as attested by the three rectangular rooms accessed through the terrace wall of the entrance area and the small suite of rooms set into the wall of the Temple Terrace to the northwest of Andron B. A third, and very important, point is the extent to which the Hekatomnid constructions are geared towards the needs of ritual dining at varying levels of prestige or formality. Andrones A and B (which will be discussed in greater detail) and the East Stoa all seem to have been intended to accommodate diners on couches; other rooms and buildings may have done so as well. Moreover, the large open areas, especially on the middle level, could readily have held large numbers of festival-goers dining more

casually in booths or the open air. A final observation is that there are two instances of striking doubling: two virtually identical propyla framing one common space and two very similar andrones, one located just above and about one building-length behind the other. We will return to this doubling and to some of the other observations about the sanctuary as a whole after discussion of key architectural features of some individual buildings.

Andron B

This remarkable building, dominating the western end of the middle terrace, has a distyle in antis plan reminiscent of many treasury buildings or small temples in Greek sanctuaries (Figure 27.3). It is executed on a much larger scale, however: approximately 11.77×20.85 m, with a column height of approximately 7.77 m and a total height of approximately 10.59 m, probably exceeding that of the temple on the terrace above (Hellström 1985: 58–74, 164). Andron B is thus almost four times as large as the Athenian Treasury at Delphi (6.57×9.65 m; Bommelaer and Laroche 1991: 133) and five times as large as the Temple of Athena Nike on the Athenian Acropolis (5.39×8.16 m; Lawrence 1996: 118). The building was constructed of gneiss ashlars, with white marble, almost certainly from Mylasa, used for the stylobate, columns, anta capitals, architrave, and frieze, as well as door and window frames, and possibly roof tiles as well (Figure 27.4). The columns stood on bases of the traditional Asiatic Ionic torus and scotia type, set on a square plinth, and carried a Doric entablature with four triglyph–metope pairs per intercolumniation (Figure 27.3). The identity of the dedicator, of the god, and of the structure itself were announced on the architrave in an elegant inscription that ran across much of the front of the building: “Maussollos son of Hekatomnos [dedicated the] andron and its contents to Zeus Lambraundos” (Crampa 1972: 9–10) (Figure 27.5).

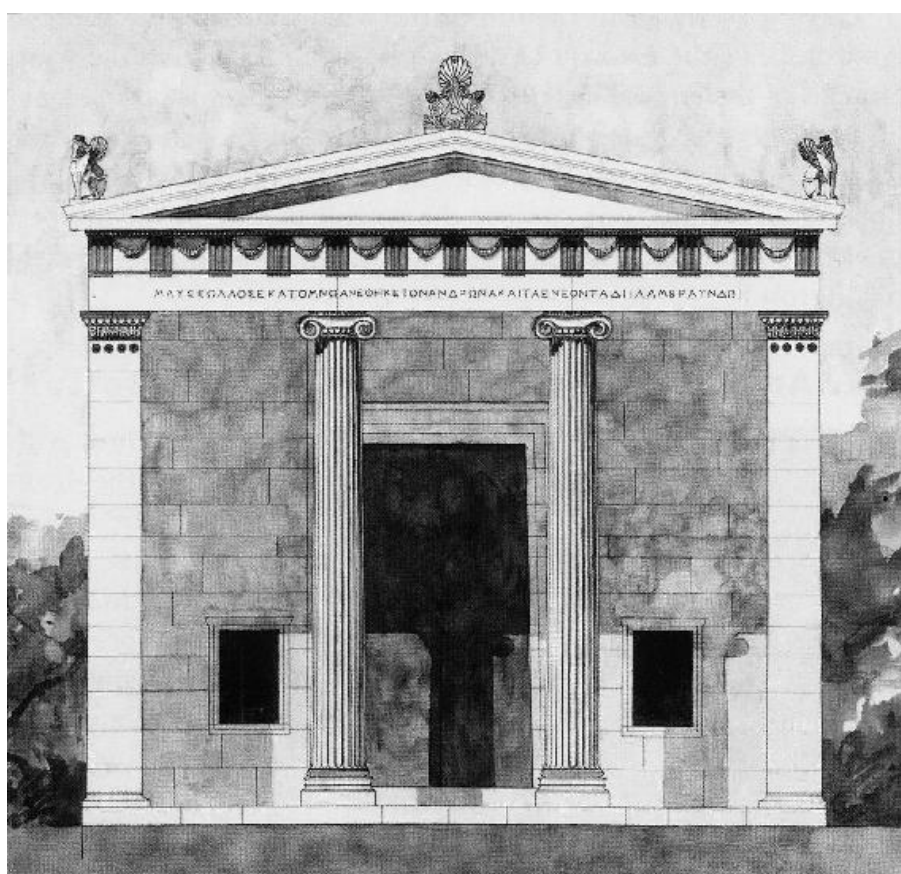


Figure 27.3 Andron B at Labraunda, restored elevation, drawn by Thomas Thieme.

Source: Hellström 2009: 270, fig. 3.

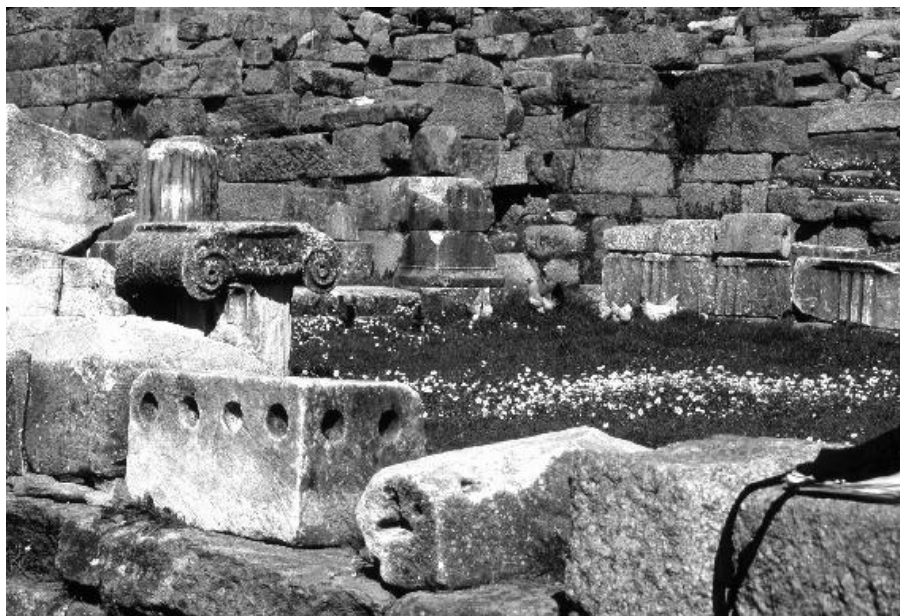


Figure 27.4 Architectural blocks, Andron B, Labraunda, view.

Source: G. Umholtz.

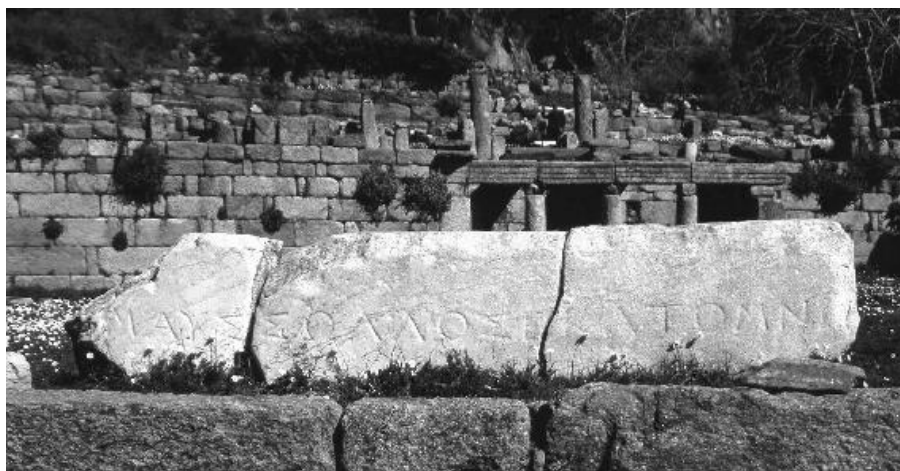


Figure 27.5 Architrave block, Andron B, Labraunda.

Source: G. Umholtz.

The term “andron” most frequently refers to the part of a house (or palace) where male guests were welcomed for drinking parties; it is striking and unusual for a freestanding building to be thus designated (Hellström 1996: 168). Although the scale and plan of the andron most closely resemble a temple, some features of the building would accord well with dining. Abundant light and air were provided through four large windows on the south side of the building (three in the main room and one in the porch), as

well as one on either side of the door. The original floor of Andron B was already destroyed in antiquity, but the better-preserved floor of Andron A included remains of a plaster platform for placement of couches along the walls, as well as fragments of a central pebble mosaic pavement (Hellström 1996: 167), and it is likely that similar arrangements existed in Andron B as well. The interior of each was dominated by a large, rectangular niche, filling the center of the west (rear) wall. Several amorphous fragments of bronze found in Andron B (including one 0.20 m long) may have belonged to a statue displayed in the niche (Hellström 1996: 168).

The bold combination of Doric frieze with Ionic columns on the façade of Andron B is one of the most striking features of this innovative structure (Figure 27.3). Mixing of orders was by no means unprecedented in Greek architecture: characteristically Ionic moldings adorned many Doric buildings in Sicily and southern Italy in the Archaic period, and the Ionic order was used to great effect in inner portions of the Parthenon and Propylaia on the Athenian Acropolis. Nevertheless, successfully deploying the sternly rectilinear pattern of a triglyph–metope frieze and Doric architrave directly above the graceful curves of Ionic column capitals was a triumph of a different sort. The effect is striking but in no way awkward or disconcerting, thanks to well-chosen proportions and special decorative details. At 0.630 and 0.595 m high, respectively, the architrave and frieze are relatively light, by classical Doric standards, and the frequency of repetition of the frieze units (four per intercolumniation) also helps to lighten and enliven the overall effect. Pontus Hellström has plausibly suggested that certain elements of the Doric order on these buildings point to an Ionian architect (1985: 158). The frieze blocks have an ovolo molding running along the top, and the triglyphs have distinctive “ears” – lateral projections with a small circular opening in the middle – at the top of either side (Figure 27.4). If these ears were designed for attachment of ornamental garlands (perhaps in bronze), as proposed by the excavators (Hellström 1996: 166–167), then those garlands would have done much to harmonize the entablature with the curving, floral elements of the Ionic column and anta capitals. The sides of the column capitals are decorated with a rich anthemion pattern, and the return of the anta capital carries a graceful, asymmetrical set of acanthus and palmette fronds. On the anta block immediately below the capital are cuttings for attaching marble rosettes, adding further to the richness of ornamentation (Hellström 1996: 167; 2007: 89).

Two beautifully carved, Persian-style, bearded sphinxes served as akroteria for Andron B. These sphinxes closely resemble examples from Sidon, as well as Achaemenid-style seal-rings from Asia Minor, and they are a beautiful manifestation of the ways in which Persian, Greek, and/or other local elements were frequently combined to produce a new visual language of power and authority in the far-flung satrapies of the Persian Empire (Stucky

1988; Gunter 1995: 21–30; Carstens 2011: 126–128). From the first glance, then, the façade of Andron B conveyed a confident and celebratory mastery of three cultural vocabularies: the Ionic prevalent in the northern parts of Caria; the Doric that predominated among Caria’s southwestern neighbors in the Dodecanese and the Knidian peninsula; and the Persian aura of satrapal authority.

North Stoa

That Maussollos also dedicated a stoa at Labraunda is attested by a dedicatory inscription preserved on a reused anta block that probably once belonged to the North Stoa: “[M]aussollos son of Heka[tomnos] dedicated the stoa to Zeus Lambraundos” (Crampa 1972: 8). This stoa ran for a length of approximately 29 m along the northern edge of the Temple Terrace. It was completely rebuilt in the Roman period, but the parts of the foundations may be Hekatomnid. The front of the building has been excavated, but exploration of the interior and back has been limited by the presence of a modern roadway along the hillside directly above (Westholm 1963: 31; Hellström 2007: 105). It is difficult to say much about the original design of Maussollos’ stoa, but the use of the anta, rather than the architrave, for the dedicatory inscription may suggest that the entablature was originally of wood.

Temple

Idrieus is named as dedicator on the inscribed architrave of the temple, but it is quite likely that work on the building had begun already under Maussollos. In its finished form the temple was peripteral, with 6×8 Ionic columns surrounding a cella built on the foundations of the earlier, simpler temple structure. These proportions are unusually short for Greek peripteral temples of the first half of the fourth century BCE: 15.65 m wide $\times$ 20.49 m long at the euthynteria (Hellström and Thieme 1982: pl. 39), due primarily to the decision to reuse the foundations of the older, distyle in antis temple as the basis for the cella. The earlier building was disassembled down to the level of the toichobate, and short foundations were added at the west end to form a very shallow opisthodomos. This alteration entailed trimming down the top surface of some of the existing blocks in order to correct for the fact that the earlier foundations were sloping downwards from west to east, probably as a result of earthquake. It may be that damage from this posited earthquake provided the occasion for the rebuilding and expansion of the temple (Hellström and Thieme 1982: 42). When planning the new, peripteral structure, the decision not to lengthen the cella may have been influenced, at

least in part, by practical considerations. To the east, gneiss foundations of an irregular, roughly square structure immediately abut the foundations of the steps of the temple. If these foundations belonged to an early altar, treasury box, or other sacred structure of some sort, a desire not to bury this under the new temple may have been a limiting factor on extension to the east (Hellström and Thieme 1982: 24–25, 43).

Despite the constraints imposed by prior conditions at the site, the resulting plan shows a strong sense of geometrical coherence and discipline. The 5 : 7 ratio of width to length of the original in antis temple is represented also in the number of intercolumniations (5 and 7) in the Hekatomnid pteron. In contrast to the graduated spacing common among earlier Asiatic Ionic temples, the spacing of the columns of the Labraunda temple is uniform throughout, creating a regular grid pattern, with the axes of the side walls of the cella aligning with the centers of the second and fifth columns of the façade (Hellström and Thieme 1982: pl. 41). Axial alignment to a columnar grid was used more extensively and rigorously by the architect Pytheos in the nearly contemporary Temple of Athena at Priene. Pytheos is said to have worked on the Mausoleum at Halikarnassos, but we do not know whether he played any role at Labraunda, or which temple was planned first (Hellström and Thieme 1982: 46–49).

The foundations and the euthynteria were of gneiss, but the pteron was built entirely of marble, as were the antae. The krepidoma consists of three steps and is slightly domed, both characteristics that are typical of mainland Greek Doric but are not represented in Asiatic Ionic before this temple and the Athena temple at Priene (Hellström and Thieme 1982: 49). On the north side of the temple, bronze swallow-tailed clamps were preserved in visible top joints of the two lower courses of the crepis, and they were probably used in the stylobate also, though those blocks no longer survive. This distinctive, decorative use of swallow-tailed clamps is attested by cuttings elsewhere in the building and site as well. Decorative use of visible clamps is not unique to Labraunda, but it seems to have been applied with particular enthusiasm here, perhaps because the swallow-tailed clamps echo the shape of the double axe of Zeus Labraundos.

The cella walls were probably of gneiss, like those of Andron B, since many ashlar survive in that material but no marble wall blocks have been identified; likewise no evidence survives for any crowning molding (epikranitis) for the wall (Hellström and Thieme 1982: 31). In contrast to the anta capitals of Andron B, the anta blocks of the temple feature symmetrical decoration on both returns and axial alignment within the bands of moldings on the front. This may be the earliest example of this type of capital, which is also found (but with an offset on the anta return) on the South Propylon at Labraunda and the Athena temple at Priene (Hellström and Thieme 1982: 53, pl. 49).

The columns had 24 flutes, separated by flat fillets; they were most likely five drums tall, for a total shaft height of approximately 5.73 m, and seem to have a slight entasis (Hellström and Thieme 1982: 25–30, 50). Many fragments of the capitals have survived, though not in a good state of preservation. They had 24 eggs on the echinus and a central balteus (of two varying widths and probably decorated with an imbricated leaf pattern) on the side of the cushion (Hellström and Thieme 1982: 30). The entablature consisted of a two-fasciaed epistyle surmounted by a dentil frieze, geison, and sima. The use of two fasciae instead of three is unusual in temple architecture in Asia Minor and may reflect the kind of flexibility found more frequently in tomb architecture. One advantage of this design was that it resulted in a greater fascia height, thus providing a more generous and prominent surface for the dedicatory inscription, which should itself be considered part of the ornamental richness of the façade (Hellström and Thieme 1982: 53–54). Not only was the front face of the architrave distinctive but also the bottom face (i.e., the soffit), visible between the columns, was decorated with a recessed, rectangular panel, a feature found on other buildings at Labraunda as well (though not on Andron B), and at both the Mausoleum at Halikarnassos and the Temple of Athena at Priene (Hellström and Thieme 1982: 34, 53). The geison, sima, and roof tiles were of marble, but the ceiling was probably of wood. A badly damaged fragment of marble sculpture found near the southeastern corner may have been part of a corner acroterion, and a fragment of bronze hair or beard found inside the temple may have belonged to a cult image (Hellström and Thieme 1982: 32, 37).

Andron A

Like the temple and Andron B, Andron A announced itself with an architraval dedicatory inscription. The name of the dedicator is not preserved, but the formula for patronymic and ethnic match those of other inscriptions in which Idrieus' name is preserved, and he would, in any event, be the most likely builder of this slightly larger and finer double of Maussollos' Andron B. The overall dimensions of the building are 12.26 m wide × 22.13 m long (including the projecting niche); the south wall still stands to a height of 7.9 m, and at its apex the building was originally approximately 10 m tall, with a column height of about 7.5 m (Hellström 2007: 127, 131).

Like Andron B, Andron A also had a façade of white marble and walls of gneiss ashlar, but the transitions were executed differently. Whereas the anta blocks of Andron B were of irregular length, bonding fully into the gneiss coursing of the side walls, the marble anta blocks of Andron A were of more uniform size, making the anta more like an independent pier secured to, but not interlocking with, the side walls (Hellström 1985: 159). The top of the

wall was also handled differently, with the frieze and architrave both carried in marble all the way around the building, not just across the front (Hellström 2011: 151). The exterior walls were almost certainly stuccoed, and the interior plastered as well.

The design of the interior of Andron A is very similar to that of Andron B, with the back wall dominated by a large niche, almost certainly for the display of statuary, about 4.8 m wide × 1.3 m deep, and about 2.3 m above the level of the threshold (Hellström 2007: 132). As mentioned above, remains of a slightly raised plaster platform make clear that dining couches were placed around the perimeter of the room (Hellström 2007: 132–133). About twenty couches of normal size could have been accommodated. Whereas Andron B has windows only on the south and east sides, Andron A has three windows on the north as well. The eastern (door) wall of Andron A is particularly thick, 1.85 m, perhaps for greater strength in the event of seismic disturbance (Hellström 2007: 127).

Oikoi

Immediately to the north of Andron A, and directly behind (i.e., to the west of) the temple, is a building of very different character, but also apparently intended to accommodate ritual dining. The building consists of two nearly square rooms, of unequal size, set side by side and both opening onto a deep porch with a façade of four Doric columns in antis. The façade was of marble but the rest of the building of gneiss. The inscribed architrave preserves intact the basic formula that seems to have been used in all of Idrieus' dedications at the site: "Idrieus, son of Maussollos, of Mylasa, dedicated the rooms (oikoi) to Zeus Lambraundos" (Crampa 1972: 14–15). The upper edge of the architrave blocks was decorated with normal regulae (with six guttae each), with one centered over each column and two above each intercolumnar space, as would be expected for a normal Doric frieze with three triglyph–metope units per intercolumniation. No triglyph or metope blocks survive, however, and the placement of dowel holes on the upper surface of the architrave suggest that the course originally placed there could not have been a normal Doric frieze. It may have been a plain course with some kind of painted decoration (Hellström 2007: 121). At the end of each architrave block, on the upper part of the front face, was a large swallow-tailed cutting for decorative clamps at the vertical joints, centered above the columns and antae. Again, as with the visible swallow-tailed clamp cuttings on the crepis of the temple, evocation of the double axe of Zeus Labraundos must have been part of the appeal of this unusual decoration.

South and East Propyla

Apart from the temple, the two gateways into the sanctuary, the South and East Propyla, are the only purely Ionic buildings in the sanctuary. They are also the only buildings whose superstructures were entirely of marble. Both propyla are nearly square in plan, with distyle in antis façades and a central crosswall pierced by three doorways. The South Propylon measures 10.53 m wide by 11.45 m deep, and its column height was 5.4 m (Hellström 2007: 71). The East Propylon was virtually identical except for minor differences in the krepidoma and the central doorway (Jeppesen 1955: 43). The South and East Propyla both have the same, symmetrical type of anta capital return as the temple and Andron A, but the floral decoration on the sides differs, with a thinner and more delicate treatment of the volutes and acanthus leaves on the East Propylon than on the South Propylon, or the (nearly identical) temple (Jeppesen 1955: 42). Like the temple, both Propyla also used decorative swallow-tailed clamp cuttings in visible joints on the surface of the stylobate and krepidoma. Normal pi-clamps were used for the actual joining, but then covered with lead to fill the larger, more decorative swallow-tailed cutting (Jeppesen 1955: 9).

Doric Building, “Magazine Building,” and East Stoa

The small Doric Building located roughly adjacent and parallel to the South Propylon may have been the last Hekatomnid building constructed at the site (Hellström 1985: 162). Its original purpose is unknown, though it may have served as some kind of fountain house. Its marble façade was originally 8.21 m long, with four Doric columns in antis, but this was shortened later, and the original side and rear walls are no longer preserved (Hellström 2007: 74). The building was unfinished, as the columns remained unfluted, but a small fragment of the architrave inscription seems to correspond with the formula used in the other dedications by Idrieus.

The Doric Building and the northern façade of the South Propylon both opened onto an entry area defined on the east by the East Propylon, on the west by a monumental, 12 m wide stairway, and on the north by the massive gneiss ashlar façade of a partially explored structure that has at various times been referred to as a magazine building or even a possible palace, but that seems fundamentally to be a major terrace retaining wall with long, narrow rooms, perhaps for storage, built into its lower level (Hellström 2007: 83). This structure was apparently built later than the retaining wall to the north of the monumental stairway (Jeppesen 1955: 43, n. 12) and has a western return that runs quite close to, but separate from, the eastern return of the stairway wall (Figure 27.1).

One of the principal functions of this “Magazine Building” terrace structure was to support the southern end of the East Stoa, which ran for 44.5 m northward at the level of the terrace on which stood Andron B to the west. The façade of the East Stoa was Doric with 17 unfluted columns, terracotta roof tiles, and probably a wooden entablature (Hellström 2007: 97). Behind the colonnade were six square rooms measuring 6.3×6.3 m, with windows on either side of off-center doorways, perfectly designed to fit 11 dining couches in each room, thus potentially accommodating 132 reclining diners in the building as a whole (Hellström 2007; 98–99; 2011: 153–154).

Architectural Significance and Impact

The development of the sanctuary under Maussollos and Idrieus was intense and varied, but also unified by recurrent themes, devices, and building types. Ionic and Doric orders were used with almost equal frequency, but in somewhat different contexts. Three of the largest and most important buildings (i.e., the temple, the South Propylon, and the East Propylon) were Ionic, while three of the more utilitarian, though still important, buildings were Doric (i.e., the Oikoi, the East Stoa, and the Doric Building). The two tallest and arguably most prominent buildings, Andrones A and B, used a Doric entablature over Ionic columns in a way that more closely approximated traditional Ionic proportions than Doric, and successfully brought together the most visually interesting elements of both. Doric influence can also be seen in certain features of the temple, like the three-stepped, slightly domed krepidoma and the inclusion of an opisthodomos. The use of decorative swallow-tailed clamp cuttings in visible joints of the krepidoma (and even the architrave in the case of the Oikoi) seems to be characteristic of the major buildings dedicated by Idrieus, but the stylobates of the andrones are not adequately preserved to show whether the device was used there as well. Also characteristic is the recessed panel on the soffit of the architrave of Andron A, the Oikoi, the Doric Building, the South Propylon and (enhanced with Lesbian leaf along the sides) the temple. This feature is found in the Mausoleum at Halikarnassos and the Temple of Athena at Priene as well, but it may have its origins at Labraunda (Hellström 2011: 150–151).

Despite the abundance of dedicatory inscriptions naming two individuals with known regnal dates, the chronology for development of the site is not entirely clear. Maussollos was satrap for more than twenty years (377–353 BCE) and is named in only two surviving inscriptions, whereas Idrieus, who reigned for barely seven years (351–344 BCE), is named in five. Moreover, two of the buildings dedicated by Idrieus (Andron A and the South Propylon) are nearly exact doubles of other structures at the site. The dedicatory formula used by Idrieus is identical to that used by Maussollos, except that Idrieus always

identifies himself as “Mylaseus” (of Mylasa). In his publication of the inscriptions, Jonas Crampa suggested that Idrieus was simultaneously emulating and distancing himself from his predecessor, eclipsing the prominence of Maussollos’ andron with his own, while implicitly rejecting his brother’s focus on Halikarnassos by highlighting his own local loyalties in the dedicatory formula (1972: 6). More recently, however, Hellström has argued that the development of the sanctuary was a unified and early project in which the two brothers collaborated, with Idrieus serving as a local administrator (hyparch) based in Mylasa while Maussollos developed his satrapal capital at Halikarnassos (2011; also Pedersen 2009: 334–337). Since neither brother uses any kind of title or indication of office in his dedicatory formula, Idrieus need not have been satrap at the time of his dedications. It has often been assumed that only a ruler would be so bold as to inscribe his name on the architrave of a building, but, as I have argued elsewhere (Umholtz 2002), nothing other than scale separates the Hekatomnid examples from dedications regularly inscribed on all kinds of objects by ordinary Greeks throughout the Archaic and Classical periods.

Viewed as an integrated whole, then, we can see how effectively the architectural development of the Sanctuary of Zeus Labraundos served to unify and elevate the many different communities whose people came together to worship at this ancient Carian gathering place. Worshippers processing along the road from Mylasa and the southwest, entering through the South Propylon, could meet those coming from Alinda and the northeast, entering through the East Propylon, and all pass together up the 12-m-wide grand staircase, to the upper levels of the sanctuary (Figure 27.2). There, a diverse array of dining facilities helped to orchestrate and reinforce new, hierarchically organized relationships centered on the strong religious and political leadership of the Hekatomnids. That leadership was probably based on a hereditary priesthood of the Carian league, probably already held by Hekatomnos at the time he became satrap (Hornblower 1982: 59–60). Developing the sanctuary at Labraunda, extending the duration of the festival, and encouraging the brother–sister marriages of his children may all have been fairly early strategies for consolidating his satrapal authority and elevating the status of his family above the rest of the Carian local elite (Hellström 2011: 152–153). Maussollos continued the process, constructing his andron and stoa, and probably undertaking many other projects as well, including terrace walls, monumental staircase, and enlargement of the temple. Idrieus, either during or after Maussollos’ lifetime, brought these and other works to completion and added the second andron, perhaps as a dining place for representatives of the Chrysaoric league, an alliance of Carian villages that may have originated in Hekatomnid times (Hornblower 1982: 62–63; Hellström 2011: 155).

At Labraunda, the Hekatomnid dynasty used Greek architecture in innovative

ways to bring together diverse cultural, ethnic, and regional groups in a sanctuary whose built environment not only reflected that diversity but also clearly conveyed the unique prestige and status of the dynasts. This kind of bold, integrative achievement had seldom been necessary (or even possible) in the world of the traditional Greek polis, but it would soon become absolutely essential as Greek architecture continued to spread and evolve in the Hellenistic period.

FURTHER READING

Hellström 2007 and the web site of the Labraunda excavations (www.labraunda.org) give excellent overviews of the site and individual monuments, as well as history of the excavations, along with abundant photos, illustrations, and bibliography. The web site also includes illustrated preliminary reports for excavation seasons since 2004. Final publications for several of the buildings, as well as pottery, sculpture, and inscriptions appear in the multivolume series *Labraunda: Swedish Excavations and Researches*. A tremendous range of Carian topics – archaeological, cultural, and historical – are addressed in excellent papers in a number of conference volumes, including Linders and Hellström 1989, Isager 1994, Rumscheid 2009, and Karlsson and Carlsson 2011. For various inquiries into Labraunda and Caria, see Karlsson, Carlsson, and Kullberg 2014. Hornblower 1982 offers a richly detailed account of Hekatomnid political and cultural history, especially under Maussollos. More recently, Ruzicka (1992), Carstens (2009), and Hornblower (2011) expand discussion of the dynasty's Persian and Anatolian contexts. Roos 1989 explores the distinctive use of Greek architectural elements in Carian rock-cut tombs, and Umholtz 2002 reassesses Greek precedents for the architraval dedicatory inscriptions at Labraunda. Pre-Hekatomnid remains at Labraunda are discussed in Thieme 1993 and Baran 2009. The unique architectural design of the andrones and the social and political implications of their use as dining spaces are discussed from a wide range of perspectives in the work of Hellström (1988; 1989; 1990; 1991; 1994; 1996; 2009; 2011). Hellenistic parallels for hierarchical dining are especially emphasized in Hellström 1990 and 1996. Diversity and flexibility in the systems of design employed at Labraunda are illuminated by metrological analyses in Jeppesen 1955, Hellström and Thieme 1982, Hellström 1985, Pedersen 1994, Thieme 1989, and Pakkanen 1999. Pedersen 2011 is a wonderful study of the international connections and implications of a distinctively Carian technical feature.

REFERENCES

Baran, A. 2009. "Karian Architecture Before the Hekatomnids." In Rumscheid, ed., 291–313.

Bommelaer, J.-F., ed. 1985. *Le Dessin d'architecture dans les sociétés antiques*. Actes du Colloque de Strasbourg 26–28 janvier 1984. Strasbourg.

Bommelaer, J.-F. and D. Laroche. 1991. *Guide de Delphes: Le site*. Paris.

Carstens, A.M. 2009. *Karia and the Hekatomnids: the Creation of a Dynasty*. Oxford.

Carstens, A.M. 2011. "Achaemenids in Labraunda. A Case of Imperial Presence in a Rural Sanctuary in Karia." In Karlsson and Carlsson, eds., 121–131.

Crapa, J. 1972. *Labraunda: Swedish Excavations and Researches. Vol. 3.2: The Greek Inscriptions*. Stockholm.

Des Courtils, ed. 1993. *Les Grands ateliers d'architecture dans le monde égéen du VI^e siècle av. J.-C.* Varia Anatolica 3. Istanbul.

DiFabio, C. and A. Waters. 2015. "The Space Between: Waters, Pilgrims, and Limits in Ancient Labraunda." Archaeological Institute of America, 116th Annual Meeting, New Orleans, LA, January 8–11.

Gunter, A.C. 1995. *Labraunda: Swedish Excavations and Researches. Vol. 2.5: Marble Sculpture*. Stockholm.

Hellström, P. 1985. "Dessin d'architecture hécatomnide à Labraunda." In Bommelaer, ed., 153–165.

Hellström, P. 1988. "Labraunda: Mixed Orders in Hecatomnid Architecture." In *Πρακτικά του XII Διεθνούς Συνεδρίου Κλασικής Αρχαιολογίας*. Athens. 70–74.

Hellström, P. 1989. "Formal Banqueting at Labraunda." In Linders and Hellström, eds., 99–104.

Hellström, P. 1990. "Hellenistic Architecture in Light of Late Classical Labraunda." In *Akten des 13. Internationalen Kongresses für Klassische Archäologie*. Mainz. 243–252.

Hellström, P. 1991. "The Architectural Layout of Hecatomnid Labraunda." *RA*, 297–308.

Hellström, P. 1994. "Architecture. Characteristic Building-Types." In Isager, ed., 36–57.

Hellström, P. 1996. "The Andrones at Labraynda. Dining Halls for Protohellenistic Kings." In Hoepfner and Brands, eds., 164–169.

Hellström, P. 2007. *Labraunda: A Guide to the Karian Sanctuary of Zeus Labraundos*. Istanbul.

Hellström, P. 2009. "Sacred Architecture and Karian Identity." In Rumscheid, ed., 267–290.

Hellström, P. 2011. "Feasting at Labraunda and the Chronology of the *Andrones*." In Karlsson and Carlsson, eds., 149–157.

Hellström, P. and T. Thieme. 1982. *Labraunda: Swedish Excavations and Researches. Vol. 1.3: The Temple of Zeus*. Stockholm.

Hoepfner, W. and G. Brands, eds. 1996. *Basileia: Die Paläste der hellenistischen Könige*. Mainz.

Hornblower, S. 1982. *Mausolus*. Oxford.

Hornblower, S. 2011. "How Unusual were Mausolus and the Hekatomnids?" In Karlsson and Carlsson, eds., 355–362.

Isager, J., ed. 1994. *Hekatomnid Caria and the Ionian Renaissance*. Odense.

Jeppesen, K. 1955. *Labraunda: Swedish Excavations and Researches. Vol. 1.1: The Propylaea*. Lund.

Karlsson, L. and S. Carlsson, eds. 2011. *Labraunda and Karia*. Proceedings of the International Symposium Commemorating Sixty Years of Swedish Archaeological Work in Labraunda. Uppsala.

Karlsson, L., S. Carlsson, and J.B. Kullberg, eds. 2014. *AABPΣ: Studies Presented to Pontus Hellström*. Uppsala.

Lawrence, A.W. 1996. *Greek Architecture*. 5th ed. Revised by R.A. Tomlinson. New Haven.

Linders, T. and P. Hellström, eds. 1989. *Architecture and Society in Hekatomnid Caria*. Proceedings of the Uppsala symposium 1987. Boreas 17. Uppsala.

Pakkanen, J. 1999. "Defining the Possible Column Shaft Height Range and Profile. A Case Study Based on the Temple of Zeus at Labraunda." *OAth*, 24: 79–88.

Pedersen, P. 1994. "The Ionian Renaissance and Some Aspects of its Origin within the Field of Architecture and Planning." In Isager, ed., 11–35.

Pedersen, P. 2009. "The Palace of Maussollos in Halikarnassos and Some Thoughts on Its Karian and International Context." In Rumscheid, ed., 315–348.

Pedersen, P. 2011. "The Ionian Renaissance and Alexandria Seen from the Perspective of a Karian–Ionian Lewis Hole." In Karlsson and Carlsson, eds., 364–388.

Roos, P. 1989. "Rock-Tombs in Hecatomnid Caria and Greek Architecture." In Linders and Hellström, eds., 63–68.

Rumscheid, F., ed. 2009. *Die Karer und die Anderen*. Bonn.

Ruzicka, S. 1992. *Politics of a Persian Dynasty: The Hecatomnids in the Fourth Century B.C.* Norman.

Schmidt, M., ed. 1988. *Kanon: Festschrift Ernst Berger zum 60. Geburtstag am 26. Februar 1988 gewidmet*. Basel.

Stucky, R.A. 1988. "Sidon, Labraunda, Halikarnassos." In Schmidt, ed., 119–126.

Thieme, T. 1989. "Metrology and Planning in Hekatomnid Labraunda." In Linders and Hellström, eds., 77–90.

Thieme, T. 1993. "The Architectural Remains of Archaic Labraunda." In Des Courtis, ed., 47–55.

Umholtz, G. 2002. "Architraval Arrogance? Dedicatory Inscriptions on Greek Architecture of the Classical Period." *Hesperia*, 71: 261–293.

Westholm, A. 1963. *Labraunda: Swedish Excavations and Researches. Vol. 1.2: The Architecture of the Hieron*. Lund.

CHAPTER 28

Pergamon and Pergamene Influence

Kristen Seaman

A visitor in Athens today, in front of the reconstructed Stoa of Attalos II, experiences the full effects of Pergamene construction as she can nowhere else ([Figure 28.1](#)). The stoa defines the eastern edge of the Athenian Agora, provides versatile spaces for archaeological storage and a museum, announces its Pergamene style through palm column capitals and other signs, beckons visitors to enter through its wide colonnade, shields them from the extremes of hot and cold weather once inside, and makes them think about the Attalids of Pergamon all the while. Although Attalos II obviously could not have predicted the presence of modern archaeologists and tourists in Athens, the Attalids did indeed plan for their construction to define space and to facilitate the goings-on of daily life at Pergamon and elsewhere.



Figure 28.1 Stoa of Attalos II, Athenian Agora.

Source: K. Seaman.

Pergamon and Its Phases of Construction

Ancient Pergamon ([Figure 28.2](#)) was located in the Kaikos river valley of what is now western Turkey, 30 km from the Aegean coast. With second-millennium BCE origins on an acropolis that dominates the landscape, Pergamon eventually spread past its fortification walls to the surrounding plains, where the modern city of Bergama now sits, and its ties extended to the port of Elaia. As the seat of the Attalid Kingdom (241–133 BCE), the city experienced its architectural and cultural floruit in the Hellenistic period, but its political and religious significance persisted, as it became the capital of the Roman province of Asia, and, later, the home of a prominent Christian community. After a devastating earthquake and a succession of invasions, its importance waxed and waned in the Middle Ages, and its acropolis gradually transformed into a castle. At that time, the Byzantines and the Seljuks alternately ruled Pergamon, and the area ultimately became an Islamic urban center in the Ottoman Empire. Yet its ancient remains continued to attract both travelers and antiquarian interest, with modern archaeological explorations starting in 1878 and continuing until the present day (Rheidt 1998; Radt 1998; Radt 2011b). Today, though, these remains give the visitor little appreciation of the full extent of Pergamon's built environment. For the notable surviving architectural elements – most famously those from the Great Altar and the Propylon to the Sanctuary of Athena Nikephoros – were reconstructed at the Pergamonmuseum in Berlin, Germany. The excavated architecture's decoration, blocks, and contents, furthermore, are now split between the Pergamonmuseum and the Archaeological Museum in Bergama.



Figure 28.2 Western side of acropolis, Pergamon, viewed from the Asklepeion.

Source: K. Seaman.

Most of Pergamon's architecture was built progressively in four main phases (for plans of the site, see [Figure 28.3a](#) and [b](#)). The first phase of construction, spanning the Archaic through early Hellenistic periods, was concentrated on the top of the acropolis. This settlement was walled as early as the seventh–sixth centuries BCE and included structures that have been identified as religious buildings. Later, during the rule of the Gongylids in the fifth century BCE, the archaic wall's gate was renovated and one portion took the form of a tower whose remains are still visible. In the fourth century BCE, the site was abandoned, and when inhabitants returned, they appear to have built the Sanctuary of Athena as well as houses on the slope of the acropolis, above the archaic wall. During the second phase of construction that was stimulated by the founder of the Attalid dynasty, Philetairos (r. 281–263 BCE), the city was rewalled along the lines of the original archaic wall, and a grid was created for a rough scheme of narrow streets and drains that led wastewater to the city's southeast gate. The Temple of Athena and the buildings on the top of the acropolis were the center of Philetairos' city (Radt 2001; 2011b; see also [Chapter 20](#)).

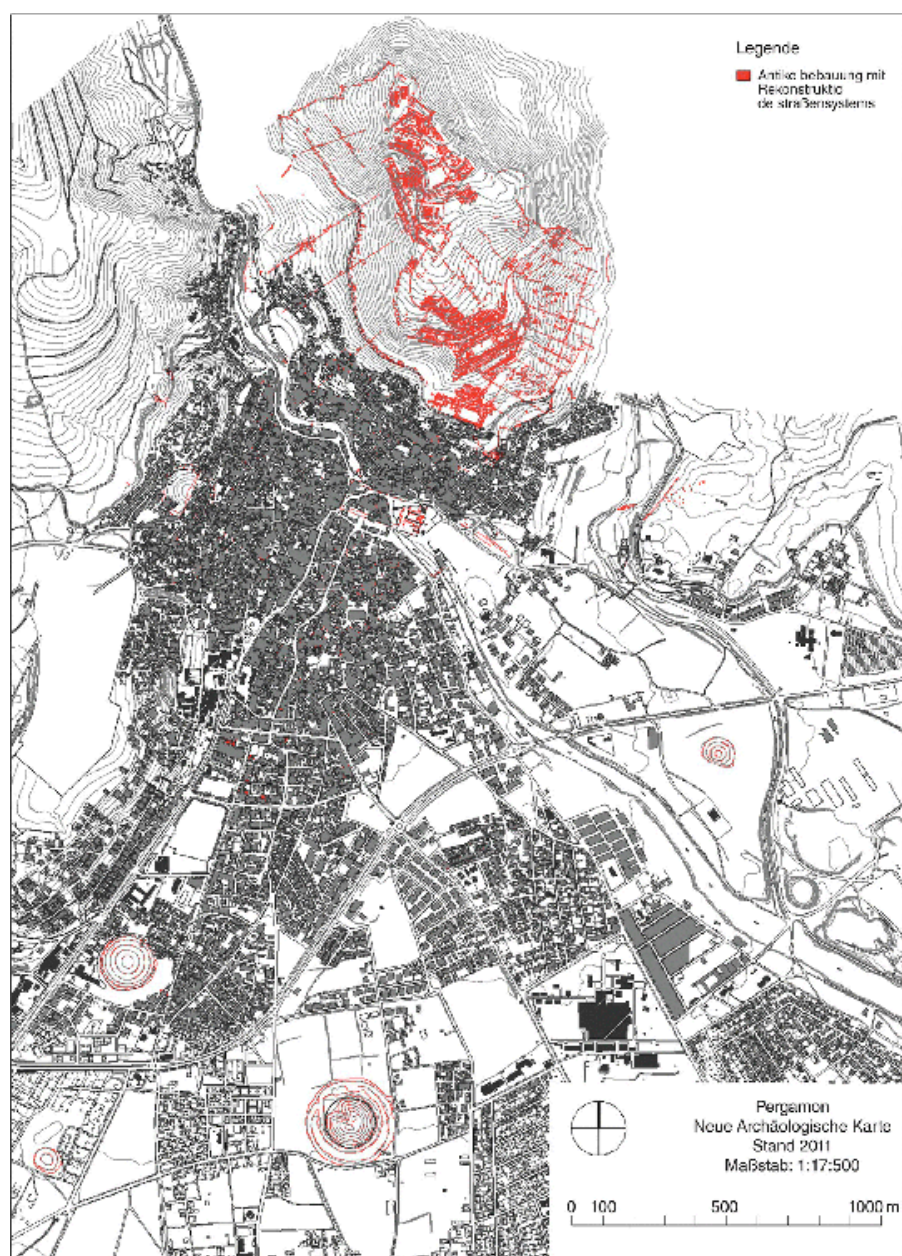


Figure 28.3a Pergamon, plan.

Source: F. Pirson, DAI.

The third and perhaps most ambitious phase took place during the reign of Attalid King Eumenes II (r. 197–158 BCE). New walls extended as far as the Selinos River Valley, and a new grid created a fan-shaped network of insulae, or blocks, that corresponded with the terrain of the acropolis. The area of the Lower Agora and the Gymnasium were then the focal point of civic activity, and more houses were built within the city walls. The acropolis's citadel, moreover, was restructured to incorporate such construction as the reorganized Sanctuary of Athena, additional royal buildings, the Great Altar, and the Theater. Finally, the fourth phase, undertaken during the reigns of the Roman emperors Trajan (r. 98–117 CE) and Hadrian (r. 117–138 CE), established a new grid and expanded the city to the plain below the acropolis. The Temple of Trajan, whose orientation apparently determined the grid, was constructed on the citadel of the acropolis, while houses, the Asklepeion, the "Red Hall," the Roman theater, the stadium, and the amphitheater were built on the plain. The Roman city had no fortification walls until the third century CE, when a new wall was built along the lines of Philetairos' wall; this rebuilt fortification may suggest either a temporary or a more enduring contraction of the city's residential areas, possibly for security (Radt 2001; 2011b).

Throughout all these phases, Pergamon's architecture had a marked sculptural quality. To some extent, this is not surprising: after all, Greek architects and sculptors underwent similar training, and some prominent men were both architects and sculptors (e.g., Pollitt 1995: 20–22; Senseney 2011: 177–181). Yet Pergamene construction emphasized three-dimensionality much more than that of other poleis. In fact, we can even say that the definition of space was both its predominant aesthetic and its main organizing principle.

The Pergamene Aesthetics of Space

In a passage quoted by Strabo (13.1.44), Attalos I (r. 241–197 BCE) describes a beautiful pine tree by breaking it into defined three-dimensional parts and articulating their mathematical relationships with each other: "Its circumference is twenty-four feet; and its trunk rises to a height of sixty-seven feet from the root and then splits into three forks equidistant from one another, and then contracts again into one head, thus completing a total height of two plethra and fifteen cubits" (trans. H.L. Jones, Loeb ed.; cf. Senseney 2011: 143–145). This may give us some insight into what could be called the Pergamene aesthetics of space. Throughout Pergamon's built environment, we can observe this same aesthetic, indeed philosophical, inclination to intellectualize space by reducing it to its articulated components.

By the time of its heyday during the reign of Eumenes II in the second century

BCE, Pergamon had been divided into two broad spatial zones that could be clearly seen from a distance. The fortification walls divided the rulers from the ruled: the Royal District with its palaces, its arsenal, and its Sanctuary of Athena at the top of the citadel from the civilian space below (Pirson 2011). The result was a monarchal hierarchy of space that contrasted the divisions of more democratic poleis in Asia Minor such as Priene (Radt 1993). There was no functional zoning in the civilian space, but its built environment did control the flow of traffic and the overall rhythms daily life there (cf. Edensor 2010b). The repetition of walls and gates throughout the city, in fact, gave the impression not so much of a unified town plan, but of self-contained “architectural ensembles” connected by relatively narrow roads and paths. By Eumenes II’s day, a gate with towers controlled the main entrance to the city. Facilitating the traffic inside were roads about 4 m wide that were constructed on axes that related to the Gymnasium. The older roads higher up the acropolis, though, remained narrower and more restrictive at about 2 m wide. And paths, rather than paved roads, were the conduits of traffic in less inhabited areas, particularly on the northeast slope (Pirson 2011). Open spaces such as the Upper Agora punctuated the flow of traffic through the city, and requisite entrance rituals such as purification undoubtedly further reinforced the partitioning of the city’s religious spaces (Paus. 5.13.3; Gheorghiu 2001; Dignas 2012).

Pergamon’s special attention to space was due not only to social structure but also to necessity: its location on a steep acropolis that made construction difficult. The Attalids increasingly exploited their architecture’s three-dimensionality, while asserting both their Greek and their Asian cultural identities, which was especially important for a new Hellenistic dynasty with tenuous ties to both mainland Greece and Asia Minor (Gruen 2000; Tanner 2005: 222–233; Kuttner 2005). They appear to have evoked and thus competed with fifth-century Athens: like that of the Athenian Acropolis, the Pergamene skyline was asymmetrical, aggregate, and easily recognized from a distance, particularly from the west (cf. Leatherbarrow 2009). And they achieved this asymmetry by employing the sort of terracing that had been used to lesser extents at sites such as Priene and Halikarnassos in Asia Minor during the fourth-century BCE Ionian Renaissance (Pedersen 2004: 429–432).

This extensive terracing made Hellenistic construction at Pergamon possible, indeed we could even say that the city was sculpted out of its acropolis. The model in [Figure 28.4](#) gives some idea of the jagged positive and negative spaces that were formed by construction on the Pergamene slopes. Terraces were cut into volcanic rock, yielding stone for the terrace walls and producing flat areas upon which construction took place. Most terraces were narrow and staggered up the slopes, altering orientations as they adapted to the landscape. But large terraces 60–70 m deep formed the courtyards of the Sanctuary of Athena and the Great Altar at the top of the acropolis. Architectural

innovations contributed to the construction of the terraces. Builders, for example, constructed a *peristasis*, or slab-covered pathway, as a gap between terrace walls and buildings throughout the city; this network of pathways protected the buildings from water and/or from the lateral earth pressure against terrace walls. Well-preserved *peristaseis* can be found in such buildings as the North Stoa of the Sanctuary of Athena and Building Z, located in the civilian space further down the slope to the south (Hoepfner 1997: 26–28; Bachmann 2011: 80).



Figure 28.4 Acropolis, Pergamon, reconstruction, after second century CE.

Source: Art Resource 182621.

The steep Pergamene slopes prompted innovations in the design of stoas as well. While many Hellenistic stoas in mainland Greece and Asia Minor were straightforward one- or two-storied structures that defined flat public squares, Pergamene stoas were three-dimensional tours de force of division, containment, and definition, easily seen by viewers from the plain. Ever adaptable to the requirements of the slopes, Pergamene stoas were often both longer and higher than the stoas at other poleis, and they sometimes were irregular within the same complex in order to accommodate the terrain. Perhaps the most striking examples were the stoas on the Theater Terrace, which were constructed during the reign of Eumenes II: a short one-story stoa abutted the hillside, while another, the so-called West Stoa, helped to form the terrace wall that faced the plain. At over 200 m, the West Stoa was the longest in the Hellenistic world, and it consisted of three stories, two of which were basements below the terrace; even its substructures' buttresses were distinctly articulated and visible from the plain. Similar multistoried stoas were constructed in the Upper Agora, the Lower Agora, and the Sanctuary of Demeter (Coulton 1976: 67–69; Hoepfner 1997: 27–28; Bachmann 2011: 75–

76). Yet stoas did more than merely articulate Pergamon's rocky verticality. They also compartmentalized the spaces on the horizontal terraces themselves, most notably in the Sanctuary of Athena Nikephoros. And many Pergamene structures, especially during the reign of Eumenes II, generally echoed the stoa form in their courtyards throughout the city. The stoa, then, was the building block of Pergamene architecture, and its ubiquity allowed it to recede into the background, to become the setting of daily life, and to be almost forgotten by viewers – thus demonstrating its true architectural significance (cf. Rossi 1982).

The Royal District

Located at the top of the acropolis, the Royal District is the most prominent part of Eumenes II's building program. Its identity is secured by a Hellenistic roof tile that is impressed with the stamp *basileion*, or “of the court” (Grüßinger, Kästner, and Scholl 2011: no. 3.45). Eumenes II reorganized this space in the second century BCE, at the same time as he constructed the Theater and the Great Altar at Pergamon. In fact, the Royal District appears to have radiated out from the Theater as part of a unified design, divided from the rest of the city by a wall with a gate in its southern section (Senseney 2011: 80). A narrow paved road passed through this gate into a small courtyard-like space, and it continued across the center of the district. To the right of the road, a row of six building groups extended to the very northern tip of the acropolis, where the Arsenal's rectangular buildings stored grain with the help of a venting system. To the left of the road was the Sanctuary of Athena Nikephoros, followed by storerooms or residential quarters, which were later supplanted by the Temple of Trajan in the second century CE (Radt 2011a: 63–78; Zimmer 2011). As we think about the Royal District's architecture, we should keep in mind that the area was actually quite small and probably did not have adequate living accommodations for everyone who was associated with the court. The Attalids and the “friends of the king” – their courtiers – most likely had additional residences elsewhere in the city and its environs (Evans 2012: 124).

The architectural remains of Building Groups I–VI (numbered consecutively from north to south) are meager, but it is possible to reconstruct their basic configuration in the time of Eumenes II. Building Groups I–III appear to have supported the courtly goings-on of the Royal District. Building Group I, just south of the Arsenal, consisted of a possibly multistoried building that perhaps served as barracks or a residence hall for staff and guests. What is probably the first Pergamene palace – a house with a peristyle court – had previously been constructed in this area, but its date is uncertain. Building Group II has been connected with the worship of Zeus, Kybele, and the Kabeiroi and, more

securely, with Pergamon's waterworks and pipes. Next, Building Group III has an assemblage of enigmatic foundations whose functions have not been identified (Zimmer 2011: 144–145). They appear to be similar to a *prostas* house, that is a house with a porch in front of its rooms (Radt 2011a: 66–67). This area might have supported aspects of Pergamon's administration such as record keeping (Hoepfner 1997: 37).

Building Groups IV–V were the most lavish structures of the building groups, and thus they have been identified as “palaces.” The configuration of Palace IV was based on that of a peristyle house: a central courtyard, with a tiled floor and cistern, surrounded by rooms. Two of these rooms have yielded notable finds. Room A, in the southeast corner of the complex, had a hearth or an altar and was decorated with a mosaic floor that depicted fish (Grüßinger, Kästner, and Scholl 2011: no. 5.41), painted stucco walls that imitated marble (Grüßinger, Kästner, and Scholl 2011: no. 5.16), and a miniature stucco entablature with a figural frieze (Grüßinger, Kästner, and Scholl 2011: no. 5.46). Room D featured colored plaster walls, and a terracotta bull's head protome was attached to one of them. In addition, a *peristasis* was created between the south wall of Palace IV and the north wall of Palace V (Zimmer 2011: 145–146).

Like Palace IV, Palace V took the form of peristyle house, but it was larger at over 2400 m². Because a rejected block from the Great Altar was found in Palace V's foundations, we know that the two buildings were built around the same time; this is unsurprising, because Pergamene buildings appear to have been planned in advance, block by block, using mason's marks (e.g., Korres 1984: 204–205; Kästner 1998: 148–149). The two-storied colonnades around Palace V's courtyard probably resembled the contemporary stoas of the Sanctuary of Athena Nikephoros and (more generally) the Great Altar's interior colonnade, suggesting that Eumenes II and his architects planned for the Royal District and the Great Altar to be unified visually. Because Palace V was relatively large and ornately decorated, it is likely that it was Eumenes II's main seat in the Royal District. Indeed, it seems to have been exceptionally suitable for royal entertaining. Its walls were faced with marble orthostates, and its floors were paved with mosaics. Room H, in the northeast corner, had metal grating at its entrance as well as an altar or a statue base, thus suggesting a religious function for the room (Radt 2011a: 68–72; Zimmer 2011: 146–147). Mosaics were found here, too. Their surviving fragments indicate that two emblemata depicted theatrical masks above the main composition: an elaborate border surrounded a long panel that depicted a garland with detailed birds and a butterfly below three small emblemata, one of which represented a hyperrealistic parrot (Grüßinger, Kästner, and Scholl 2011: no. 5.42).

Two other rooms appear to have served as dining rooms, owing to their off-centered doors that could have accommodated *klinai*, or dining couches,

around the walls (Hoepfner 1997: 37–39; Radt 2011a: 68–72; Zimmer 2011: 146–147). Excavations of one of these, Room K in the northwest corner, yielded both the “Dancer” marble statuette (Grüßinger, Kästner, and Scholl 2011: no. 5.24) and the Hephaistion Mosaic. Although much of this mosaic is now lost, its extant portions include an elaborate border as well as an emblem representing the artist Hephaistion’s signature on a piece of parchment that appears to be fluttering off the pavement (see [Chapter 20](#)). This signature (“Hephaistion made [me]”) is the mosaic’s most celebrated feature, but its border is not without interest. For example, an especially lifelike grasshopper is represented among one band’s vegetation (Grüßinger, Kästner, and Scholl 2011: no. 5.43). Klinai most likely sat on this border, encircling the room (Zimmer 2011: 146–147).

We also may speculate that the most famous mosaic in antiquity was once in Room I, the larger room next door to the east. Pliny (*HN* 36.184) states that the *Unswept Room* by Sosos was displayed at Pergamon. He tells us that it depicted a meal’s realistic detritus and was associated with another scene that represented birds preening themselves around a kantharos, or drinking vessel. Roman copies of both scenes have been identified – and have strongly suggested a *trompe l’oeil* hyperrealism (Parlasca 1963; Andreae 2003: 161–175). As a copy at Aquileia attests, the trash most likely surrounded the central avian scene in Sosos’ original composition (Torlo 2005: 16–17). Klinai probably sat on or around the depiction of this trash, and tables possibly stood on top of it, too, making diners seem especially messy – and the host especially lax with etiquette – at symposia, or drinking parties. Through the process of elimination, I believe that Room I is the most likely candidate of all excavated Pergamene dining rooms for Sosos’ mosaic: no other mosaics were found there *in situ*; its grand setting would have been a fitting place for such an eye-catching mosaic; and, as we saw with the Hephaistion Mosaic, Eumenes II had an established interest in mosaicists who made their names known in antiquity. All the mosaics that are associated with Palace V, then, helped create the Pergamene aesthetics of space: because of their hyperrealistic details (including shadows), they emphasized three-dimensionality within a bound architectural area.

Between Palace V and the Royal District’s gated entrance was Building Group VI. Owing to excavated finds such as arrows and spear tips as well as its suggestive location, this complex is thought to have had a military function, which included guarding the king and his courtiers (Zimmer 2011: 145, 147).

Directly across the Royal District’s paved road from Building Groups V–VI was the Sanctuary of Athena Nikephoros. Here, the marble L-shaped North-East Stoa and the South Stoa created a pi-shaped boundary opposite the Temple of Athena that framed the sanctuary. Visitors entered the sanctuary through a Propylon that faced the courtyard-like area right at the entrance to

the Royal District. Now on display at the Pergamonmuseum in Berlin, the Propylon took the innovative form of a two-tiered stoa surmounted by a frieze of garlands and bucrania and, finally, a pediment. Its architectural configuration was repeated throughout the sanctuary's stoas: a lower story with an outer Doric colonnade and an upper story with an outer Ionic colonnade connected by reliefs that formed a balustrade. Both stories also had an inner row of columns, with Ionic capitals on the first story and distinctive Pergamene palm capitals on the second, much like those of the Stoa of Attalos II in Athens (Kästner 2011c; Radt 2011a: 159–168).

An inscription on the Propylon's architrave announced the sanctuary's patronage: "King Eumenes [dedicated this] to Athena Nikephoros" (Kästner 2011c: fig. 9). And the architectural sculpture of the Propylon and the stoas alluded both to the Attalids' victories and to their mythical past, especially their founder Telephos and his Trojan War that took place not far away. Most of the extant balustrade reliefs, for example, depict spolia, or captured weapons, thus monumentalizing the Greek custom of displaying real spolia in stoas (cf. Coulton 1976: 12–13). Other panels represent the Greeks building the Trojan Horse, Athena with Telephos or his father Herakles, and a gigantomachy that includes Zeus and Athena (Grüßinger, Kästner, and Scholl 2011: nos. 6.24–26). Although scholars most often associate these mythological reliefs with the stoas, it is worth keeping in mind that the reliefs currently displayed in the Propylon are actually plaster casts. Thus it is possible that the three mythological reliefs were originally displayed in the Propylon's second-story balustrade; their varying lengths do fit its spaces for a longer central relief flanked by two narrower ones. This allusion to the Attalids' mythical past appeared elsewhere in the stoas as well. The North Stoa's niches displayed relief panels that carried figures such as Prometheus, Herakles, and the personified mountain Caucasus (Grüßinger, Kästner, and Scholl 2011: no. 5.31).

As the ancient visitor walked through the Propylon, he faced the Temple of Athena Nikephoros within the area enclosed by the sanctuary's stoas. Probably dating to the fourth century BCE, the temple had actually been the original part of the sanctuary and thus was a fitting focal point. Combining Doric features with local techniques and materials, the design of the temple suggests that patrons and builders were interested in fusing elements from both mainland Greece and Asia Minor at the very start of monumental architecture on the Pergamene acropolis in the fourth century BCE. This Doric peripteral temple was oriented north–south, with a plan of 6×10 columns, on a two-step krepidoma. The cella, most likely divided by a cross wall, was framed with a pronaos and an opisthodomos, both of them di-style in antis. The unusually slender columns of the peristyle were spaced further apart than usual, and therefore its Doric frieze required three metopes and two and two half triglyphs per interaxial space; together with a low epistyle, this

resulted in a proportionally low entablature, with the result that the elevation had a light, Ionic appearance. Its manufacture, moreover, was highlighted: the columns were deliberately left unfluted, and pi-shaped clamps remained visible in dovetail-shaped cuttings on the blocks of the stylobate and the krepidoma step. It was constructed of local andesite stone, with local tuff Doric capitals. Overall, its construction seems deliberately similar to other temples in Asia Minor such the Temple of Athena at Assos and buildings at Labraunda (Hoepfner 1997: 30–35; Pedersen 2004: 415–427; Kästner 2011b; see [Chapter 27](#)).

The sanctuary's courtyard, moreover, was full of sculpture. Most notably, the sanctuary bound and contained three monuments that commemorated Attalos I's victories in the 230s–220s BCE: the Kaikos Monument, in the center of the courtyard; the Greater Attalid Dedication, which ran parallel to the South Stoa; and the Epigenes Monument, whose exact location is unknown. The Kaikos Monument most likely consisted of a colossal Athena Promachos atop a round base. The Greater Attalid Dedication, furthermore, probably displayed a Gallic and Seleucid bronze battle group on a long base. And the Epigenes Monument possibly carried a portrait of Attalos I. The sanctuary also enclosed numerous other military dedications as well as expropriated sculpture by such classical Greek artists as Myron and Praxiteles (Brogan 1999: 67–119; Marszał 2000; Stewart 2004: 197, 213–214; Tanner 2005: 222–233).

The famous Library of the Royal District has been tentatively identified as the building that joins the North Stoa on its north side, accessible through the stoa. This building had one large room, with three smaller rooms to its west. A 50-cm-wide stone podium ran along three walls of this large room, and holes suggest that these walls might have displayed bookcases, paneling, or pinakes (plaques) that perhaps were inscribed with the Library's catalogue. A one-third scale representation of Pheidias' Athena Parthenos from the Parthenon in Athens also was found here. The podium might have carried other artworks, too. The smaller rooms, furthermore, could have accommodated the 200 000 scrolls that the Library possessed (Plut. *Ant.* 58.5–59; Wolter-von dem Knesebeck 1995: 45–56; Hoepfner 2002b; Brehme 2011; Radt 2011a: 165–168). Together with the Library of Alexandria, the Library at Pergamon was one of the two preeminent intellectual centers in the Hellenistic world. Although the archaeological evidence does not conclusively prove that it was located in the Royal District, its connections with the Attalid court support its tentative association with this building. And this building's location directly across the street from Palace V – the probable main palace of Eumenes II – is suggestive for the social courtly life of the intellectuals who used the Library.

Overall, then, the sanctuary's – and thus the Royal District's – bounded space, with its sculptural emphases on commemoration, retrospection, and the mythical past, constructed a site of memory, a place where the viewer could

visit the Attalids' version of the past – and where the Attalids were the triumphant patrons of Classical Greek art and, possibly, literature (cf. Crang and Travlou 2001; Ma 2009).

The Great Altar

Less than 200 m from the gate to the Royal District was the Great Altar (Figure 28.5), which is perhaps the most extraordinary – and certainly the most famous – example of Pergamene architecture. It was a pi-shaped monument (for it is more like a squared temple than a typical altar) that consisted of a colonnaded courtyard supported by a stepped podium, with a grand central stairway up one side. The altar proper (of modest size) was in the center of the courtyard. At 36.80 × 34.20 m (approximately 100 Ionic feet square, or a hekatompedon), it sat within a large enclosed terrace, just past the Upper Agora, to the left of the road that led up to the Royal District. After entering the terrace from the road, visitors had to walk around the monument to access its entrance-stair because the monument faced the broad plain to the east. The dates of the pottery in its construction fill, the style of its column capitals, and the first known dedication on the terrace suggest that the building was built between the mid-160s BCE and 149/8 BCE, but it was never entirely finished, perhaps owing to Eumenes II's death in 158 BCE (Stewart 2000; Kästner 1998, 2011a). An inscription on the architrave is phrased in the language that the Attalids used to commemorate victory: “[King Eumenes son of King Attalos and Q]uee[n Apollonis fo]r the blessing[s befallen us to Zeus and Athena Nikephoros]” (Green 2000: 177–179). Although strikingly new as an enclosure for an altar, it does resemble monuments in Asia Minor such as the Nereid Monument at Xanthos and the mausolea at Halikarnassos and Belevi, which commemorated the lives of dynasts in the fourth–third centuries BCE (Sturgeon 2000; see Chapter 26). When creating the Great Altar's new form, Eumenes II and his architects, then, probably alluded to these older monuments in order to commemorate his military achievements – especially his defeat of the Gauls in 166 BCE – in a local Asian-Greek way. What is more, we may perhaps associate the construction of the Great Altar, if not his entire building program, with his attempt to assert his own importance for Ionian Greeks in the mid-160s (cf. *Orientalis Graecae Inscriptiones Selectae* [OGIS] 763).



Figure 28.5 Great Altar of Pergamon, second century BCE.

Source: Art Resource 4965.

From top to bottom, the Great Altar was both sculptural and Pergamene in conception, with clearly articulated parts. Within its enclosed terrace, it was framed much like the bound and contained temple and sculpture in the contemporaneous Sanctuary of Athena Nikephoros. Akroteria that represented gods, horses, lions, tritons, griffins, and centaurs sat on its roof, leaving marks on the extant roof blocks that prove their ancient presence. The next register had an Ionic colonnade with Asiatic-Ephesian bases that consisted of a flat plinth, a spira with a double scotia, and a convex torus. The capitals on these Ionic columns were varied; one conspicuous type depicted a scroll with Zeus's thunderbolt. Below this, a baroque sculptural frieze represented a gigantomachy, or battle of the gods and giants, around the monument's exterior. Inside the courtyard, an Ionic colonnade stood in front of a frieze that depicted the life of Telephos on the courtyard's walls. Finally, in the center of this courtyard was an altar (Kästner 1998, 2011a).

This interior altar was a rectangular podium flanked by wings and covered

with a (now-lost) fire-resistant layer of plaster (Kästner 2011a: 207). Literary and numismatic evidence indicate its sacrificial function in at least the Roman period, but, because of cuttings on the top, it appears to have displayed spolia during the time of the Attalids. Such a display was consistent with the exhibition of arms and armor in the Greek world, especially in stoas. The colonnade around the interior courtyard made the space resemble a stoa, and the spolia themselves echoed the representations of weapons on the balustrades of the stoas in the Sanctuary of Athena Nikephoros (Lucius Ampelius *Liber memorialis* 8.14; Stewart 2000: 46–49).

Yet the exterior and interior friezes were surely the monument's most memorable features. Carved *in situ*, the exterior Gigantomachy Frieze was originally 113 m long and 2.30 m high. It represented the battle of the Olympian gods and the giants, who were the children of Gaia (Earth) and Ouranos (Sky). Although some portions are lost, its basic order is known from the extant inscribed blocks that gave identifications of gods and giants (and the names of artists below). These inscriptions were indispensable because the frieze was assuredly just as overwhelming in antiquity as it is today. It continues to impress viewers with its deep carving; snaky scaled legs, feathers, and hair; and seemingly unending presentation of obscure mythical figures. Even with the inscribed glosses, the ancient viewer probably needed to consult the stoic philosopher Kleantes' *On Giants* (circa 250 BCE) if he wanted to understand the figures and their individual set pieces within the broader battle. Its sculptural techniques were wide-ranging, drawing upon the history of Greek sculpture up to that point (Stewart 1990: 210–212; Queyrel 2005). Particularly impressive was the choice to make the gigantomachy's figures spill onto the stairs, entering the viewer's space and joining him as he goes up to the courtyard. In fact, one could say that the Great Altar's centrality in Eumenes II's building program was highlighted by this sculptural passage. For here, the Pergamene aesthetics of space were violated: the sculpture was no longer contained in its articulated compartment. Using every trick in the book of Greek sculpture, the Gigantomachy Frieze suggested that there was nowhere left for architectural sculpture in the Greek world to go – except to the innovative Telephos Frieze in the center of the building.

At first glance, the Telephos Frieze might have appeared old-fashioned when compared with the gigantomachy. But, to be sure, the ancient viewer quickly realized that the Telephos Frieze was doing something new in Greek sculpture: it told the life story, or *bios*, of its main protagonist, from conception through apotheosis. Originally 59.6 m long and 1.58 m high, the frieze now is missing many portions. In antiquity, the ancient viewer first saw the complete frieze through the interior colonnade, whose columns framed the individual scenes in its running narrative. Then, to see the frieze up close, he turned to his left and entered the space between the colonnade and the frieze, encircling the courtyard clockwise. Telephos was a fitting choice for this

monument, for not only was he a mythical founder of Pergamon but also he was a focal point for discussions about Greek identity. Although he was born in Greece, he moved to Asia Minor as an adult. Details on the frieze such as clothing and footwear highlighted his Asian-Greek identity and that of other figures. Thus, like Eumenes II (and the Attalids more generally), Telephos was both Greek and Asian (Eur. *Telephus*; Stewart 1996; Kuttner 2005).

Pergamene Architecture outside Pergamon

The Great Altar was (and is) dazzling, but the Attalids and their architects did not restrict their innovative architecture to Pergamon itself. As we saw with the Stoa of Attalos II at Athens at the beginning of this essay, the Attalids were heavily involved in architectural projects outside Pergamon, too: stoas, fortifications, temples and sanctuaries, gymnasiums, harbor moles, and probably a stadium (Hansen 1971: 284–298; Winter 1993; Winzor 1996: 63–144). They were active in Asia Minor and were donors at heavily visited places such as Athens, Delos, and Delphi. Indeed, their beneficence was well known throughout the Greek world, though their motives were occasionally questioned (Livy 42.5.3; Polyb. 22.8.5). They funded construction and maintenance in both Asia Minor and mainland Greece, sometimes providing a steady stream of revenue through donations of money or grain for a system of loans (e.g., Polyb. 4.65.6; *Clara Rhodos* 9: 190/208; *Miletos* 45). Micromanaging their projects, they hired overseers and supplied craftsmen as well as materials (e.g., *FD III* 3:239; *Miletos* 44; *Sammlung Griechischer Dialekt Inschriften* II 2001). Masons' marks and stamps even indicate that some blocks and roof tiles might have originated in Pergamon (e.g., Welter 1954: cols. 45–46; Korres 1984: 204–205; Pirson 2004: 207–208).

Many people throughout Greek areas, then, experienced the Attalid built environment on a daily basis. And, to be sure, some obvious labels such as dedicatory and honorific inscriptions indicated the origins of such beneficence. But to what extent did viewers recognize the construction as Pergamene? Most viewers, especially those in mainland Greece, had no first-hand knowledge of Pergamon. Therefore they could have identified Pergamene style only through perceiving the commonalities of Attalid construction closer to home. For a start, Attalid architecture throughout Asia Minor and Greece exhibited the Pergamene aesthetics of space. The stoa, to be sure, was a ubiquitous element in public spaces. The best preserved (and certainly most thoroughly reconstructed) example is the Stoa of Attalos II at Athens (circa 150 BCE, [Figure 28.1](#)). It not only defined the Agora's horizontal space by making a border on its eastern edge, but it also defined and articulated uneven ground by including a subterranean level (Kohl 2001). Attalid patronage was especially successful with making steep slopes look

Pergamene and thus marking Attalid presence at the whole site. The Attalids and their architects certainly contributed to, and perhaps even dominated, the southern skyline of the Athenian Acropolis. They erected colossi of an Attalos and a Eumenes and the Lesser Attalid Dedication (200 BCE), a long battle monument with under lifesize giants, Amazons, Persians, and Gauls, on top of the Acropolis (Stewart 2004). And, on the South Slope, the Stoa of Eumenes II (circa 170–160 BCE) provided a façade for the gymnasium in front of it (Calligas 2009; Tofi 2010). The Terrace of Attalos I in the Sanctuary of Apollo at Delphi (circa 210 BCE) also defined and articulated the verticals and the horizontals of the sanctuary's rocky incline, and it even framed pillar monuments of Attalos I and Eumenes II (Roux 1987; Jacquemin and Laroche 1990, 1992). More grandly, Eumenes II probably subsidized the construction of the pi-shaped upper stoa and the terrace at the Sanctuary of Asklepios at Kos, Rhodes, which transformed the spatial orientations of the entire site (Winter 2006: 216–217).

The Attalids favored construction that receded into the background of daily life, just as they did at Pergamon. Thus, the majority of their known projects used such stoas. Ancient literary and epigraphical evidence suggests how everyday people experienced these versatile buildings, sometimes in ways that deviated from original intentions. In the Roman period, for example, audiences knew the Stoa of Attalos II to be a backdrop for public speaking in the Athenian Agora (Ath. 5.212f). By this time, too, the Stoa of Eumenes II at Athens afforded theatrical storage and a place for theatergoers to escape inclement weather (Vitr. *De arch.* 5.9.1). And the stoa in the Terrace of Attalos I at Delphi was apparently such a popular (and perhaps ill-treated) place that the Amphictyonic League had to regulate its use (*Corpus d'Inscriptions de Delphes* 485). The Attalids also demonstrated a clear interest in building walls and fortifications, and even this utilitarian construction was appreciated (Polyb. 4.65.6; Winter 1966). Other practical works such as post-earthquake repairs were noted on publicly displayed inscriptions as well (*FD* III 3:239).

Informed by such inscriptions, visitors undoubtedly connected these projects with the Attalids, but the Attalids' interest in facilitating the mundane was indeed subtle (and thus all the more politically effective). Certainly more noticeable were the details that viewers saw when standing next to Attalid construction. Pseudo-isodomic masonry – that is masonry that alternates wide and narrow courses and incorporates small blocks – is seen in Attalid construction projects both at Pergamon and elsewhere (see [Chapter 18](#)). In Athens, it appears in the Stoa of Attalos II and in the bases of at least two pillar monuments on the Acropolis, one at the northeast corner of the Parthenon ([Figure 28.6](#)) and one near the Propylaia (Korres 2000; Kohl 2001: 247–252; Monaco 2010). These pillar monuments were probably honors from the Athenian demos that responded to Attalid benefaction (cf. Goette 1990;

Korres 2000). Their masonry, then, suggests that the Attalids facilitated construction, just as Eumenes II did when the Milesians honored him with a gold statue (*OGIS* 763). At Delphi, this masonry appears throughout the Terrace of Attalos I, including the stoa, the so-called oikos building, and the bases of the pillar monuments (Roux 1987; Jacquemin and Laroche 1990, 1992). What is more, the lower parts of columns were left unfluted at such buildings as the Stoa of Attalos II and the Stoa of Eumenes II at Athens as well as at the Stoa of Attalos I at Delphi (Roux 1987: 55–58; Kohl 2001: 247–250). Pseudo-isodomic masonry and unfluted column drums had practical functions: ensuring sturdiness and minimizing damage from passersby (Winter 1966: 130). But they also tied Attalid construction together visually. Less functional and thus even more obviously a Pergamene marker were the palm capitals that appear in both the Stoa of Attalos II and the Stoa of Eumenes II at Athens (Kohl 2001: 249). These are similar to the capitals in the North Stoa in the Sanctuary of Athena Nikephoros at Pergamon itself. Yet it should be noted that Pergamene architecture on mainland Greece did differ from that at Pergamon in other respects. For example, the Athenian stoas used the local proportions of the Doric order and not those of Pergamon (Winter 1993: 261). Therefore, we know that the Attalids and their architects were selective when giving Pergamene architectural signs to viewers outside Pergamon.

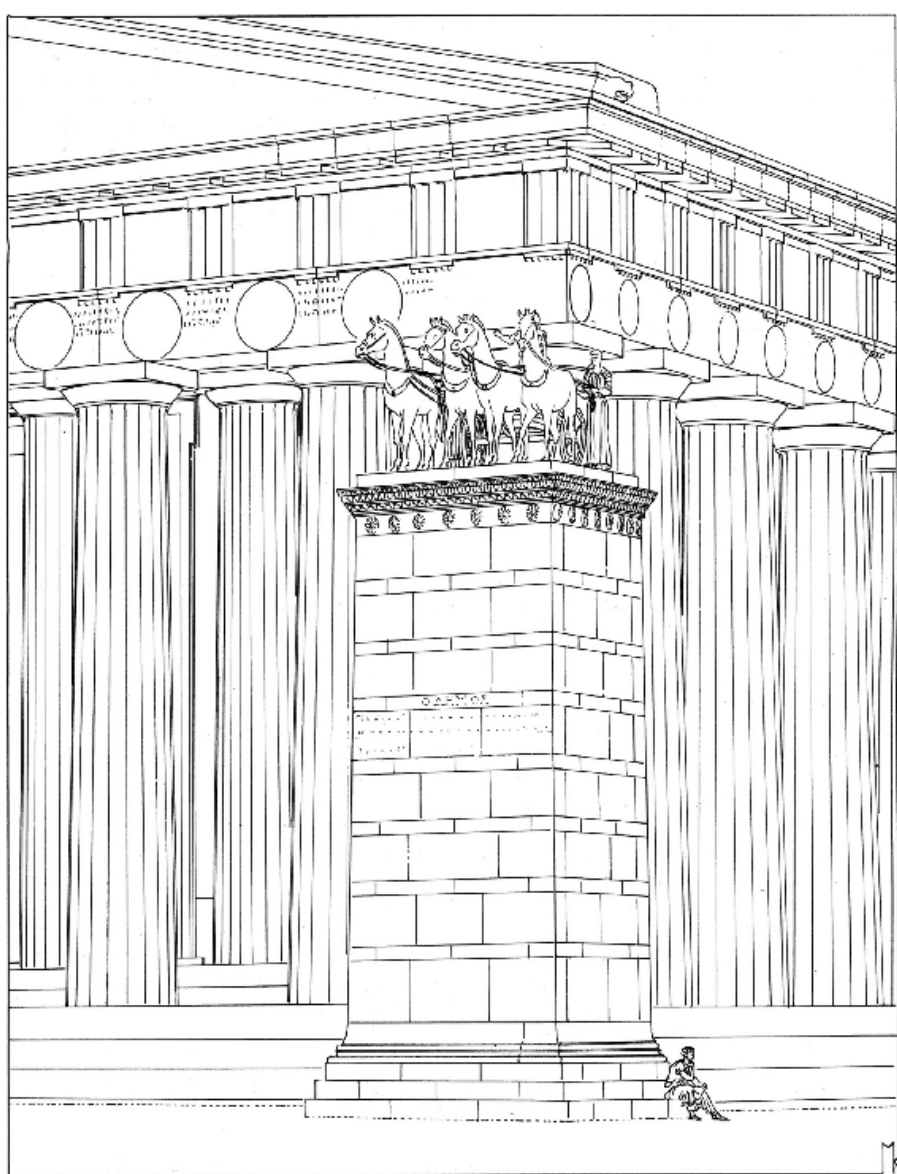


Figure 28.6 Attalid pillar monument, Athenian Acropolis, reconstruction, late third–early second century BCE.

Source: M. Korres.

Of course, at some sites it is difficult to differentiate Attalid patronage from architecture that merely appropriates Pergamene elements. For this reason, scholars have often used the catchall phrase “Pergamene influence” to describe architecture that looks Pergamene but cannot be directly connected with the Attalids through inscriptions or literary references. Falling under this heading, for example, are stoas in the agoras at Aigai and Assos (circa mid-second century BCE), which had not only subterranean levels but also

peristaseis that responded to the terrain (Coulton 1976: 70–71, 213–214, 218–219). The most notable example of Pergamene influence is, perhaps, the Sanctuary of Athena Lindia at Lindos, Rhodes. Here, circa 200 BCE, colonnaded terraces were added to its propylaia, which ascended the acropolis until it reached the temple at the top. Together with steps, they defined and articulated the slope with vertical and horizontal lines, much as the stoas at Pergamon did (Winter 2006: 217–218). Given that they were constructed around the very beginning of Eumenes II's reign, one does wonder, though, whether such "influence" worked both ways and the work histories of architects and workmen – not to mention the mechanisms of patronage – were more dynamic and fluid than we usually consider.

More explicit references to Pergamon's architecture and its contents continued throughout the Hellenistic and Roman periods, too. Often they involved the display of Hellenistic rulers. At the beginning of his reign and the closing of the Hellenistic world, the Roman emperor Augustus presented himself as a Hellenistic ruler through his residential architecture. A peristyle house complete with a library and a nearby temple, the House of Augustus on the Palatine Hill in Rome seems to have been modeled on Palace V and its proximity to the Library and the Sanctuary of Athena Nikephoros (Hoepfner 1997: 38–39). Private Roman individuals appear to have consciously emulated Attalid display as well. Roman villas, according to Cicero (*Verr.* 2.127), were decorated with Pergamene art (Kuttner 1995: 166). And the many copies of the *Unswept Room* mosaic attest to the popularity of one such artwork (Moormann 2000; Andreae 2003: 161–174). Because Pliny mentioned its Pergamene context, we know that the mosaic's Pergamene associations were well known in the Roman world. The sculptural contents of Pergamene architectural spaces also had a long afterlife – copies of vanquished figures in the Greater and Lesser Attalid dedications were displayed, for example, in Republican and Imperial Rome – though there the specifically Pergamene associations seem weaker (see Stewart 2004).

Allusions to Pergamene architecture also dealt with cultural identity. It is not surprising that inhabitants of Asia Minor selected Pergamene architecture – especially the Great Altar – as a reference point. One frieze on the second-century BCE Temple of Hekate at Lagina, for example, recalled the Great Altar's gigantomachy (Kuttner 1995: 167; Baumeister 2007). And, later, the second-century CE Parthian Monument probably echoed the Great Altar's pi-shaped form, sculptural friezes, and broad themes of negotiating Greek identity (Winkler-Horaček 2009). Like the Great Altar itself – indeed all Pergamene architecture – these monuments helped to construct Asian-Greek identity in Asia Minor, which was made even more complex by Rome's increasing presence in the area.

ACKNOWLEDGEMENTS

I should like to thank Margaret M. Miles for inviting this contribution; Andrew Stewart for reading a draft of it; Felix Pirson and the DAI for permission to reproduce a plan of Pergamon from the recent excavations; and Volker Kästner, Manolis Korres, Michaelis Lefantzis, Samantha Martin-McAuliffe, and Christina Vlassopoulou for help with particular points.

FURTHER READING

Up-to-date archaeological information about Pergamon and its architecture is found on the website of the Deutsches Archäologisches Institut (www.dainst.org/en/project/pergamon) Results of the archaeological excavations have been published in the *Altertümer von Pergamon* and the *Pergamenische Forschungen* series. The most comprehensive recent publications about the site are Radt 2011a and Grüßinger, Kästner, and Scholl 2011, with useful new computerized reconstructions. The older architectural summaries of Hoepfner 1997 and Radt 1998 are still useful, as are more specific studies about planning and urbanization (e.g., Radt 1993, 2001; Pedersen 2004). Winter 1993 and the unpublished dissertation of Winzor (1996) collect the evidence for Attalid architectural patronage both at Pergamon and elsewhere. Discussions about architectural sculpture and other aspects of Pergamon's visual culture appear in Schalles 1985, Dreyfus and Schraudolph 1996–1997, de Grummond and Ridgway 2000, Marszał 2000, Queyrel 2003, Stewart 2004, Kuttner 2005, Queyrel 2005, Massa-Pairault 2007, Massa-Pairault and Sauron 2007, Kohl 2008, Massa-Pairault 2010, Petersen and von den Hoff 2011, and Coarelli 2014. In addition, Köse 2012 provides an overview of art and architecture in Asia Minor. Hansen 1971 remains a fundamental resource for the study Attalid history, and to this we may now add the more recent work of Gruen (2000), Dmitriev (2005), Habicht (2006), Kosmetatou (2006), Dignas (2012), Evans (2012), and Thonemann (2013).

REFERENCES

- Andreae, B. 2003. *Antike Bildmosaiken*. Mainz am Rhein.
- Bachmann, M. 2011. "Pergamenische Architektur und Bautechnik." In Grüßinger, Kästner, and Scholl, eds., 74–81.
- Baumeister, P. 2007. *Der Fries des Hekateions von Lagina: Neue Untersuchungen zu Monument und Kontext*. Byzas 6. Istanbul.
- Boys-Stones, G., B. Graziosi, and P. Vasunia, eds. 2009. *The Oxford*

Brehme, S. 2011. "Der Bibliothek von Pergamon." In Grüßinger, Kästner, and Scholl, eds., 194–197.

Brogan, T.M. 1999. "Hellenistic Nike: Monuments Commemorating Military Victories of the Attalid and Antigonid Kingdoms, the Aetolian League, and the Rhodian Polis, ca. 307 to 133 bce." PhD dissertation, Bryn Mawr College.

Calligas, P.G. 2009. "To panathēnaïko stadio. Mia nea ermēneia." *Archaïologia & Technes* 113: 86–95.

Coarelli, F. 2014. *La Gloria dei vinti: Pergamo, Atene, Roma. Catalogo della mostra*. Rome.

Coulton, J.J. 1976. *The Architectural Development of the Greek Stoa*. Oxford.

Crang, M. and P. Travlou. 2001. "The City and Topologies of Memory." *Environment and Planning D: Society and Space*, 19: 161–177

de Grummond, N.T. and B.S. Ridgway, eds. 2000. *From Pergamon to Sperlonga: Sculpture and Context*. Berkeley.

Dignas, B. 2012. "Rituals and the Construction of Identity in Attalid Pergamon." In Dignas and Smith, eds., 119–144.

Dignas, B. and R.R.R. Smith, eds. 2012. *Historical and Religious Memory in the Ancient World*. Oxford.

Dmitriev, S. 2005. *City Government in Hellenistic and Roman Asia Minor*. Oxford.

Dreyfus, R. and E. Schraudolph, eds. 1996–1997. *Pergamon: The Telephos Frieze from the Great Altar*. 2 vols. San Francisco.

Dupré Raventós, X. and J.-A. Remolà, eds. 2000. *Sordes Urbes: La Eliminación de Residuos en la Ciudad Romana*. Rome.

Edensor, T., ed. 2010a. *Geographies of Rhythm: Nature, Place, Mobilities, and Bodies*. Farnham.

Edensor, T. 2010b. "Introduction: Thinking about Rhythm and Space." In Edensor, ed., 1–18.

Ersine, A., ed. 2006. *A Companion to the Hellenistic World*. Oxford.

Evans, R. 2012. *A History of Pergamon: Beyond Hellenistic Kingship*.

London.

Gheorghiu, D. 2001. "The Archaeology of Space: Ritual and Metaphor." In Malm, ed., 25–29.

Goette, H. 1990. "Eine grosse Basis vor dem Dipylon in Athen." *MDAI(A)*, 105: 269–278.

Greco, E., F. Longo, M.C. Monaco, *et al.*, eds. 2010. *Topografia di Atene: Sviluppo urbano e monumenti dalle origini al III secolo d.C.* Vol. I. Athens.

Green, P. 2000. "Pergamon and Sperlonga: A Historian's Reactions." In de Grummond and Ridgway, eds., 166–190.

Gruen, E.S. 2000. "Culture as Policy: The Attalids of Pergamon." In de Grummond and Ridgway, eds., 17–31.

Gruen, E.S., ed. 2005. *Cultural Borrowings and Ethnic Appropriation in Antiquity*. Stuttgart

Grüßinger, R., V. Kästner, and A. Scholl, eds. 2011. *Pergamon: Panorama der antiken Metropole*. Berlin.

Habicht, C. 2006. *The Hellenistic Monarchs*. Ann Arbor.

Hansen, E. 1971. *The Attalids of Pergamon*. 2nd ed. Ithaca.

Hoepfner, W., ed. 1984. *Bauplanung und Bauthorie: Diskussion zur archäologischen Bauforschung 4*. Berlin.

Hoepfner, W. 1997. "The Architecture of Pergamon." In Dreyfus and Schraudolph, eds., 23–57.

Hoepfner, W., ed. 2002a. *Antiken Bibliotheken*. Mainz.

Hoepfner, W. 2002b. "Die Bibliothek Eumenes' II. in Pergamon." In Hoepfner, ed., 41–52.

Jacquemin, A., ed. 2000. *Delphes cent ans après la Grande fouille*. *BCH*, Suppl. 36. Paris.

Jacquemin, A. and D. Laroche 1990. "Les Piliers attalides et la terrasse pergamenienne à Delphes." *RA*, 215–221.

Jacquemin, A. and D. Laroche. 1992. "La Terrasse d'Attale Ier revisité." *BCH*, 116: 229–258.

Kästner, V. 1998. "The Architecture of the Great Altar at Pergamon." In Koester, ed., 137–161.

Kästner, V. 2011a. "Die Altarterrasse." In Grüßinger *et al.*, eds., 198–211.

Kästner, V. 2011b. "Anfänge – Pergamon in vorattalidischer Zeit." In Grüßinger *et al.*, eds., 28–33.

Kästner, V. 2011c. "Der Heiligtum der Athena." In Grüßinger *et al.*, eds., 184–193.

Köse, V. 2012. "Asia Minor." In Smith and Plantzos, eds., 330–349.

Koester, H., ed. 1998. *Pergamon: Citadel of the Gods*. Cambridge, MA.

Kohl, M. 2001. "La Genèse du portique d'Attale II: Origine et sens des singularités d'un bâtiment construit dans le cadre de la nouvelle organisation de l'agora d'Athènes au IIe siècle av. J.-C." In Marc and Moretti, eds., 237–266.

Kohl, M., ed. 2008. *Pergame: Histoire et archeology d'un centre urbain depuis ses origins jusqu'à la fin de l'antiquité*. Lille.

Korres, M. 1984. "Vorfertigung und Ferntransport eines athenischen Grossbaus und Proportionierung von Säulen in der hellenistischen Architektur." In Hoepfner, ed., 201–207.

Korres, M. 2000. "Αναθηματικά και τιμητικά τέθριππα στην Αθήνα και τους Δελφούς." In Jacquemin, ed., 293–329.

Kosmetatou, E. 2006. "The Attalids of Pergamon." In Erskine, ed., 159–174.

Kuttner, A. 1995. "Republican Rome Looks at Pergamon." *HSPH*, 97: 157–178.

Kuttner, A. 2005. "'Do You Look Like You Belong Here?' Asianism at Pergamon and the Makedonian Diaspora." In Gruen, ed., 137–206.

Leatherbarrow, D. 2009. *Architecture Oriented Otherwise*. New York.

Ma, J. 2009. "The City as Memory." In Boys-Stones, Graziosi, and Vasunia, eds., 248–259.

Malm, ed. 2001. *Archaeology and Buildings*. BAR International Series 930. Oxford.

Marc, J-Y. and J.-C. Moretti, eds. 2001. *Constructions Publiques et Programmes Édilétaires en Grèce*. BCH, Suppl. 39. Paris.

Marszal, J.R. 2000. "Ubiquitous Barbarians: Representations of the

Gauls at Pergamon and Elsewhere.” In de Grummond and Ridgway, eds., 191–234.

Massa-Pairault, F-H. 2007. *La Gigantomachie de Pergame ou l’image du monde*. BCH, Suppl. 50. Paris.

Massa-Pairault, F-H. 2010. *Pergamo e la filosofia*. Rome.

Massa-Pairault, F-H. and G. Sauron, eds. 2007. *Images et modernité hellénistiques: Appropriation et représentation du monde d’Alexandre à César*. Collection de l’École française de Rome 390. Rome.

Möller-Christiansen, T., ed. 1993. *City and Nature: Changing Relations in Time and Space*. Odense.

Monaco, M.C. 2010. “Il monumento di Eumene II/Agrippa.” In Greco, Longo, Monaco, *et al.*, 78–80

Moon, W.G., ed. 1995. *Polykleitos, the Doryphoros, and Tradition*. Madison.

Moormann, E.M. 2000. “La bellezza dell’immondezza: Raffigurazioni di rifitui nell’arte ellenistica e romana.” In Dupré Raventós and Remolà, eds., 75–94.

Parlasca, K. 1963. “Das pergamenische Taubenmosaik und der Sogenannte Nestor-Becher.” *Jdl*, 78: 256–93.

Parrish, D., ed. 2001. *Urbanism in Western Asia Minor: New Studies on Aphrodisias, Ephesos, Hieropolis, Pergamon, Perge, and Xanthos*. JRA, Suppl. 45. Portsmouth, RI.

Pedersen, P. 2004. “Pergamon and the Ionian Renaissance.” *MDAI(I)*, 45: 409–434.

Petersen, L. and R. von den Hoff, eds. 2011. *Skulpturen in Pergamon: Gymnasion, Heiligtum, Palast*. Münster.

Pirson, F. 2004. “Elaia, der maritime satellite Pergamons.” *IstMitt*, 54: 197–213.

Pirson, F. 2011. “Stadtraum und Städtebau in hellenistischen Pergamon.” In Grüßinger, Kästner, and Scholl, eds., 66–73.

Pollitt, J.J. 1995. “The *Canon* of Polykleitos and Other Canons.” In Moon, ed., 19–24.

Queyrel, F. 2003. *Les Portraits des Attalides: Fonction et représentation*. Athens.

Queyrel, F. 2005. *L'Autel de Pergame: Images et pouvoir en Grèce d'Asie*. Paris.

Radt, W. 1993. "Landscape and Greek Urban Planning, exemplified by Pergamon and Priene." In Möller-Christiansen, ed., 201–209.

Radt, W. 1998. "Recent Research in about Pergamon: A Survey (ca. 1987–1997)." In Koester, ed., 1–40.

Radt, W. 2001. "The Urban Development of Pergamon." In Parrish, ed., 43–56.

Radt, W. 2011a. *Pergamon: Geschichte und Bauten einer antiken Metropole*. Darmstadt.

Radt, W. 2011b. "Lage und Stadtentwicklung des antiken Pergamon." In Grüßinger, Kästner, and Scholl, eds., 21–27.

Rheidt, K. 1998. "In the Shadow of Antiquity: Pergamon and the Byzantine Millennium." In Koester, ed., 395–413.

Rossi, A. 1982. *The Architecture of the City*. Harrisburg, PA.

Roux, G. 1987. *Fouilles de Delphes II: Topographie et architecture: La Terrasse d'Attale*. Paris.

Schalles, H.-J. 1985. *Untersuchungen zur Kulturpolitik der pergamenischen Herrscher im 3. Jahrhundert v. Chr.* Istanbuler Forschungen 36. Tübingen.

Schultz, P. and R. von den Hoff, eds. 2009. *Structure, Image, Ornament: Architectural Sculpture in the Greek World*. Oxford.

Senseney, J.R. 2011. *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture*. Cambridge.

Smith, T.J. and D. Plantzos, eds. 2012. *A Companion to Greek Art*. Malden, MA.

Stewart, A. 1990. *Greek Sculpture: An Exploration*. New Haven.

Stewart, A. 1996. "A Hero's Quest: Narrative and the Telephos Frieze." In Dreyfus and Schraudolph, eds., 39–52.

Stewart, A. 2000. "*Pergamo ara marmorea magna*: On the Date, Reconstruction, and Functions of the Great Altar of Pergamon." In de Grummond and Ridgway, eds., 32–57.

Stewart, A. 2004. *Attalos, Athens, and the Akropolis: The Pergamene*

“Little Barbarians” and the Roman and Renaissance Legacy.
Cambridge.

Sturgeon, M. 2000. “Pergamon to Hierapolis: From Theatrical ‘Altar’ to Religious Theater.” In de Grummond and Ridgway, eds., 58–77.

Tanner, J. 2005. *The Invention of Art History in Ancient Greece: Religion, Society, and Artistic Rationalisation.* Cambridge.

Thonemann, P., ed. 2013. *Attalid Asia Minor: Money, International Relations, and the State.* Oxford.

Tofi, M.G. 2010. “La Stoa di Eumenes II.” In Greco, Longo, Monaco, *et al.*, 194–195.

Torlo, M.V. 2005. *Aquileia: Mosaici.* Trieste.

Welter, G. 1954. “Aeginetika XXV–XXXVI.” *AA*: cols. 29–48.

Winkler-Horaček, L. 2009. “Roman Victory and Greek Identity: The Battle Frieze on the ‘Parthian’ Monument at Ephesus.” In Schultz and von den Hoff, eds., 198–215.

Winter, F.E. 1966. “Notes on Military Architecture in the Termessos Region.” *AJA*, 70: 127–137.

Winter, F.E. 1993. “Royal Patronage in Hellenistic Architecture.” *EMC*, n.s. 12: 151–181.

Winter, F.E. 2006. *Studies in Hellenistic Architecture.* Toronto.

Winzor, C.E. 1996. “The Architectural Patronage of the Attalids and Ptolemies.” PhD dissertation, Oxford University.

Wolter-von dem Knesebeck, H. 1995. “Zur Ausstattung und Funktion des Hauptsaaes der Bibliothek von Pergamon.” *Boreas*, 18: 45–56.

Zimmer, T. 2011. “Die Basileia – Der Palastberirk von Pergamon.” In Grüßinger *et al.*, eds., 144–147.

CHAPTER 29

New Directions in Hellenistic Sanctuaries

Bonna D. Wescoat

Alexander the Great financed building projects in sanctuaries and allegedly had grand plans to construct lavish temples in the future, all of which his successors quietly set aside as “extravagant and hard to achieve” (*Memoranda of Alexander*, Diod. Sic. 18.4.1–6). Nevertheless, rulers in the centuries following the death of Alexander in 323 BCE keenly realized the power of architecture to shape and connect the vast and heterogeneous territory they now governed, which stretched from Macedonia and Greece to Egypt and Bactria (in modern Afghanistan). Sanctuaries developed in synchronicity with the major drive to urbanize, but they were also an independent phenomenon. Because they marked the inviolate place of the god(s) on earth, and thus served as points of connection with divine forces, sanctuaries continued to play a vital role as international gathering places and centers for the reception, transmission, and dissemination of religious, political, social, and cultural ideas. Serving as repositories of memory and agents of change, sanctuaries provided an environment where individuals and communities could forge identity, exert regional authority, negotiate diplomatic issues, channel competition and celebration, demonstrate financial or military success, or respond to mutable social and spiritual demands (see [Chapters 9](#) and [10](#)). Their architectural elaboration facilitated human interaction with the divine by coordinating acts of worship, celebration, and commemoration.

Architectural trends in both new and refurbished sanctuaries of the Hellenistic period emerged from developments already in motion in the fourth century, but they were also deeply affected by the changes in the political, economic, religious, and social climate following the breakup of Alexander’s empire. The shift in political authority from the Greek polis to kings, whose commitment was territorial rather than civic (a shift that reaches back to Philip II and the second third of the fourth century BCE), changed the dynamics of patronage. Hellenistic royalty not only realized the potency of architecture but also had the resources to deploy it, particularly in international sacred venues. Royal patrons left their imprint on almost every important sanctuary, old and new, across the eastern Mediterranean. Moreover, they advertised their donations with large dedicatory inscriptions written prominently across their buildings. The increasingly wealthy merchant class also played a role in funding dedications. Changing religious interests

also affected sanctuaries and sanctuary design. The rise of cults emphasizing personal transformation and cults merging Greek and foreign gods occasioned the need for new building types and complexes that shaped a new experience for participants.

Several consistent themes emerge in this investigation of Hellenistic sanctuaries. While the sanctuaries remained organic and their buildings cumulative, key innovations centered on overall composition and hierarchy. In the paratactic design of Archaic and Classical sanctuaries, each building made a discrete statement both in design and function, with the temple taking pride of place. In Hellenistic sanctuaries, individual components were often subordinated to a hypotactic, orthogonal plan for the larger temenos. By working not just with structures but also the spaces and connective tissue between them, Hellenistic architects realized the design potential in “connecting the sacred dots.” This kind of composition was not merely an attempt to tidy up the Archaic and Classical temenos (although that may have been one objective) but rather emerged from the desire to craft and control visitors’ experience of the sacred environment. The approach was also pragmatic. Integrated and interlocking building components were financially viable and technically achievable, with the whole becoming greater than the sum of the parts. They enabled Hellenistic architects to reach a level of scale and grandeur that suited the patrons and clientele who lived among wonders such as the Mausoleum at Halikarnassos, the Pharos at Alexandria, and the Colossus of Rhodes (see [Chapter 30](#)).

This new concept of spatial composition encompassed a number of important qualities associated with Hellenistic sacred space, including: a willingness to exploit and even recraft the natural environment in order to achieve desired effects; a strong tendency for orthogonality and axiality; an emphasis on framing buildings, vistas, and views; a more conscious manipulation of space and mass, level, distance, scale, and light and shadow; and a more overt application of geometry, both legible and imbedded (Senseney 2011). These creative and highly expressive developments clearly aimed at shaping the experience of the participant, both visually and kinetically. Such objectives were not absent from earlier sanctuaries, but they were not so explicitly the driving force. Hellenistic sanctuaries are often called “theatrical,” a concept to which we shall return.

A new hierarchy among buildings accompanied the changed conception of sacred space. The temple became *an* element, not *the* element of the new sacred space. In most cases it continued to be the principal object, but more often by virtue of its focal position within the composition than by its size or isolation (exceptions were the colossal temples of Artemis at Ephesos and Sardis, Apollo at Didyma, and Zeus at Athens, which in fact revived Archaic traditions). A growing interest in the power of the façade accompanied increased attention to interior space; prostyle façades did not entirely replace

the venerable peripteros, but they increasingly were attached to a wide range of new building types. With the heightened emphasis on sacred experience, the altar achieved new prominence, especially in the Aegean islands and coastal Asia Minor, and the space around or leading to the altar took on more formal importance. In shaping space, the stoa and its architectural cousin, the colonnaded portico, became the workhorses of Hellenistic design. More than any other structure, they defined the shape of new Hellenistic sanctuaries and effectively “modernized” the space of older sanctuaries.

Flexibility and adaptability were further hallmarks of Hellenistic sacred architecture. Functionally different buildings could have similar plans, for example, the winged stoa, propylon, or altar. Axiality in Greek sanctuary design was not the strictly bilateral experience it would become on Italic soil (see [Chapter 32](#)). The orders found new loci of innovation. Despite the apparent criticisms of Late Classical and Hellenistic architects Arkesios, Pytheos, and Hermogenes (Vitr. 4.3.1), the Doric order was not only alive but now also flourished in Asia Minor, formerly the domain of Ionic (Tomlinson 1963). The combined entablature of the Ionic order became standard. And perhaps most significantly for the history of Western architecture, the Corinthian made its debut as a monumental structural order. Hellenistic architects were also adept at manipulating scale within the same order – an idea already deployed in the Classical period on the Propylaia in Athens – to highlight a structure or frame space (e.g., Temple A on the upper terrace of the Sanctuary of Asklepios on Kos). This idea, too, became a hallmark of Western architectural thinking.

Our chief interest centers on the development and diffusion of Greek architectural design in sanctuaries that either rose to prominence or were largely rebuilt under the successors of Alexander. The sanctuaries of Athena Lindia on Rhodes, Asklepios on Kos, and the Great Gods on Samothrace serve as models; the equally important sanctuaries of Apollo at Didyma, Artemis at Magnesia, and Zeus at Labraunda appear in other chapters in this volume. Smaller Hellenistic sanctuaries at Priene, Megalopolis, and Pergamon repeat key features that appear consistently in Hellenistic sanctuary design, while Delos, Delphi, and Olympia bear additions that give them a Hellenistic “facelift.” In non-Greek regions, sacred architecture both reflected and served as a means of working out worship within the different religious systems of the Hellenistic world. While we cannot pursue the richly diverse trends occasioned by these encounters, we may, in closing, examine one of the more synthetic forms that emerged, the Serapeion.

The Offset Axis: The Sanctuary of Athena Lindia,

Rhodes

The Archaic polis shrine of Athena, set precipitously close to the southeastern edge of the 380-ft-high acropolis of Lindos on Rhodes, probably marked the sanctity of the cave in the cliffs below. After the temple was destroyed by fire in 392/1 BCE, the Lindians reaffirmed ancient religious traditions by replacing it in the early Hellenistic period with a new Doric temple set on the same spot with the same tetrastyle amphiprostyle plan as its predecessor (Dyggve and Poulsen 1960; Lippolis 1988–1989; Hollinshead 2012: 36–41; for the ancient roots, see Higbie 2003; Shaya 2005). The Hellenistic designers, however, completely transformed the experience of reaching the temple ([Figure 29.1](#)). They replaced the Archaic diagonal flight of stairs with a succession of axially coordinated and symmetrically balanced winged colonnades, stairs, landings, and entranceways through which the visitor ascended to the temple. The main components consisted of a lower precinct framed by a Lower Stoa with deep wings, which was connected by a grand stairway to a narrower upper precinct entered through the winged Propylaia. All of the buildings were in the Doric order and built of limestone. They formed a unified, hypotactic design, orthogonally aligned with the temple, but offset to the north and west to take best advantage of the uneven topography.



Figure 29.1 Sanctuary of Athena Lindia, Rhodes. View of stair leading to acropolis.

Source: Bonna D. Wescoat.

Whether or not the entire complex was planned from the start (Lippolis 1988–1989: 134, 148–153) or cumulatively came to define the entrance to the sanctuary (Hollinshead 2012: 40), the impetus for it emanates from the temple

(Figure 29.2). The Propylaia created a monumental entranceway for the temple, which physically and visually channeled the visitor's approach while effectively screening off the inner sanctum. The design recalls its namesake, the Propylaia in Athens, but with important differences. The Lindian Propylaia rested on a high, artificial platform. Its tetrastyle prostyle wings, framing a broad landing, faced forward and echoed the design of the temple beyond. The façade's closer parallel is, in fact, skene design. These once ubiquitous temporary structures have all but disappeared; we may glimpse their design in a Gnathian kalyx krater fragment in the Martin von Wagner Museum in Würzburg (Figure 12.7, *CVA Würzburg* 4.57–59, pl. 52.1).



Figure 29.2 Sanctuary of Athena Lindia, Rhodes. View of temple.

Source: Bonna D. Wescoat.

Within, asymmetrical porticos shaped a temenos with the temple in the southeast corner. The diagonal approach to the naos deliberately recreated the angle of the Archaic path, another reassertion of the ancient shrine. Traces of a structure in the court seem likely to be the altar. Architects closed the temenos on the west with a series of square (dining?) rooms and on the east with a blind colonnade running right to the façade of the temple. The south side remained open until the Roman period, however, so that visitors could approach the rear of the temple with its magnificent, unobstructed views along the coast.

The Lower Stoa, perhaps part of the rebuilding campaign following the devastating earthquake of 227/6 BCE, transformed the sanctuary from a small, tightly organized complex into a paradigm of Hellenistic sacred design. The 87-m-long building presents a unified façade across the lower acropolis, but in fact it consists of a continuous colonnade joining two deep, separately roofed

L-shaped wings set on each side of the great stairway. The screen of columns across the stairway created a permeable boundary to the upper precinct. By broadly embracing the entrance to the acropolis and tightly framing the great stairway, the stoa funneled visitors toward the main objective: the temple on the summit. Like the Propylaia, its wings have tetrastyle prostyle Doric façades that mirror the temple (Winter 2006: 217–218). These sets of ascending temple-front façades on progressively narrower buildings create sharp contrasts of scale, heighten the perspective, and give the illusion of grander height and distance.

The terrace framed by the Lower Stoa supported a rich array of dedications including exedra monuments, group statues, trophies, tripods, and a naval dedication in the form of a ship's prow supporting a statue (perhaps of Nike or the *trierarch*). Another naval monument, in the form of a ship's stern, was cut in the rock at the entrance to the acropolis (Gabrielsen 1997: 88, pls. 4–5). In the first century BCE, the terrace was roughly doubled with a platform supported by a barrel-vaulted substructure and bisected by yet another flight of stairs aligned with those leading to the Propylaia.

The Sanctuary of Athena at Lindos employs not only contrasts of scale and elevation characteristic of Hellenistic design but also elements of surprise and unveiling. The initial narrow ascent to the acropolis offers no hint of the orchestrated terracing on the summit. The banks of stairs and embracing wings of the buildings shape a direct ascent that is screened by colonnades and a door-wall. Passing into the inner precinct, the viewer expects the temple to fall on axis; instead, pulled to the edge of the cliff, the temple hovers precipitously at the pinnacle of the rock. Its bifocal design draws visitors to its south façade, where their own position in the landscape, as well as the spectacular position of the naos, is best appreciated. Man-made interventions restrict some views but open others in spectacular panoramas; a corollary effect is the view of the temple from far out to sea.

The Bent Axis: The Sanctuary of Asklepios at Kos

The healing Sanctuary of Asklepios on the nearby island of Kos arose in the salubrious environment of a sacred grove of cypress trees and natural springs in the hills just inland from the coast. The site was originally sacred to several deities, including Paian, Apollo Pytheos, and Apollo Kyparissios (Sherwin-White 1978: 336–346). The site gained importance following the synoikism and foundation of Kos city and the death of the island's most famous physician, Hippokrates, around the middle of the fourth century. By the first half of the third century BCE, the temenos incorporated three ascending terraces; the major monuments belong chiefly to the second century BCE (Figure 29.3).

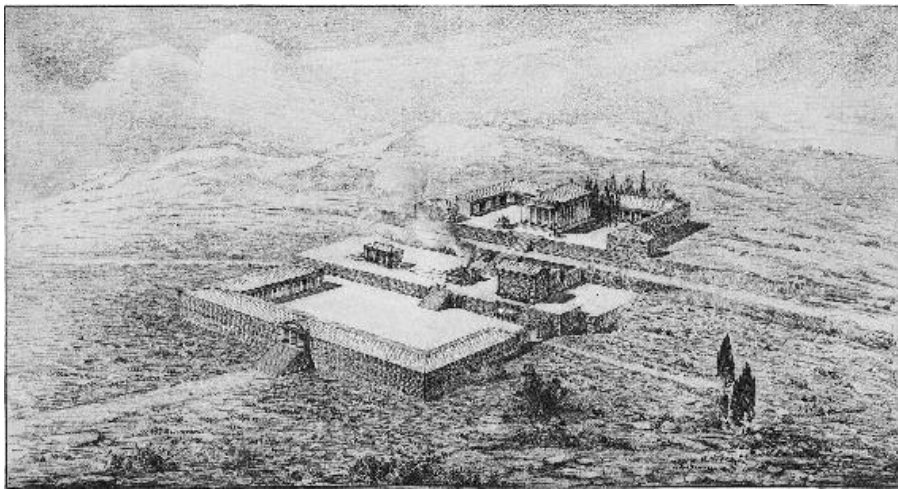


Figure 29.3 Sanctuary of Asklepios, Kos, restored bird's-eye view.

Source: adapted from Schazmann and Herzog 1932, pl. 40.

The core sacred space developed on the narrow intermediate terrace, where the main cult buildings – an altar and a distyle in antis Ionic Temple of Asklepios (Temple B) – faced one another on the east–west axis. The temple's Asiatic column bases and entablature combining both frieze and dentils follow third-century BCE design. Other structures clustered on the terrace included another temple beneath the Roman Temple C, a springhouse and wells, an oikos (Building D, identified as an abaton or dining facility), an exedra, and Building E, which likely held dedications (Herod. *Mime* IV for the altar and works of art; Schazmann and Herzog 1932).

On either side of this middle terrace, facing pi-shaped porticoes – wooden to enclose the sacred grove on the upper terrace and stone to create a broad terrace on the lower – created an architectonically framed environment. To level the sloping ground, the lower northern portico was set on a high foundation, its exterior unadorned save for a small tetrastyle propylon approached by a steep flight of stairs. The impact differs radically from the embracing stoa in the Sanctuary of Athena on Lindos. At Kos, the exterior emphasized exclusion, but, inside, the sacred space opened to a spacious but focused experience appropriate to a healing cult. The axial focus also differed. The lower terrace was perceptibly skewed from the north–south axis of the middle and upper terraces, and its propylon was not aligned with the stairways between terraces. The bent axis introduced a subtle tension to the experience of ascending from one terrace to the next.

In the second century BCE, the upper terrace was redeveloped to feature a marble hexastyle peripteral Doric temple (Temple A) approached by a monumental stairway and framed on three sides by stone porticoes that gave on to rooms for patients visiting the sanctuary. Temple A communicated

directly with the earlier Temple B and a newly built altar on the middle terrace via two broad flights of stairs separated by a deep landing. The new construction emphatically oriented the sanctuary along a dominant north–south axis. Unlike many Hellenistic temples that were set against the back of or even incorporated within framing colonnades (see Priene or Megalopolis later in the chapter), Temple A at Kos pressed right to the front, so that it was prominently visible from the lower terraces and more distant views. The smaller scale of the Doric framing colonnades accentuated the grandeur of the temple. Such play of scale, first explored by Mnesikles in the Propylaia on the Athenian Acropolis, became a key element of contemporary shrines in Italy (e.g., Juno at Gabii or Hercules Victor at Tivoli) and a hallmark of Roman public architecture (e.g., the Forum of Augustus).

The design of Temple A reflected several ideas already present in Archaic Greek sacred architecture, including the hexastyle façade with deep eastern pteroma, or walkway (e.g., the Temple of Athena at Assos), but the deep pronaos and flank composed of only 11 columns ties directly to the fourth-century Temple of Asklepios at Epidauros. The connections forged with the venerable sanctuary reflect an underlying historicity characteristically Hellenistic, but the considerably greater scale of the Koan temple was perhaps a directly competitive gesture. Its design has a dry elegance that suggests an underlying geometric basis (Senseney 2007). The Attalid king Eumenes II, a generous patron of architectural donations, may have underwritten the project (for patronage, see Winter 1993: 267–69; 2006: 216; more cautiously, Hollinshead 2012: 44–45).

Connecting the terraces, the grand stairway not only shaped the processional route but also served as excellent stands for witnessing the sacrifices at the new Ionic altar, which belongs to the class of elaborate, architectonically framed offering tables that became the focal points of many Hellenistic sanctuaries in Asia Minor and adjacent islands. Although monumental altars reach back to the Archaic period, the Ionian Renaissance of the fourth century BCE brought renewed vigor to the form, and the second century witnessed its flowering (e.g., the Great Altar of Pergamon, see [Chapter 28](#); for others, Linfert 1995). There are also a number of elegant altars to Athena at Priene, Artemis at Magnesia, Dionysos and Asklepios on Kos, Apollo Karneios at Knidos, Dionysos at Teos, Zeus Lepsynos at Euromos, and Apollo at Klaros. In the kinetically driven designs of the Hellenistic period, such altars represent an important shift of architectural energy from the relatively static temple to the performative center of the cult where sacrifices took place. The Koan altar rose on a podium and was enclosed by framing walls and a surrounding colonnade that opened to a broad entry ramp on the west. Freestanding marble statues occupied the intercolumniations. The elaborate barrier would have limited viewing the sacrifice to certain vantages, although the sounds, visible smoke, and smell of roasting meat would have permeated the sanctuary.

The second-century elaborations – altar, stairs, temple, and upper portico – transformed the Sanctuary of Asklepios from a loosely framed space into a tightly integrated architectural complex with a dynamic spatial progression punctuated by three separate ascents, each generating a different meaning: segregation, reorientation, and, finally, culmination in a temple within a framed sacred grove, a natural expression of the divinity within the temenos. From here, the pilgrim not only enjoyed a bird's-eye view of the sanctuary but also the panoramic vista of the surrounding countryside, sea, and coast of Asia Minor.

The Intentionally Circuitous: The Sanctuary of the Great Gods on Samothrace

The Sanctuary of the Great Gods on the northern Aegean island of Samothrace rose to prominence in the second half of the fourth century when, possibly through the patronage of Philip II, it received its first marble building (the Hall of Choral Dancers: [Figure 29.4](#), no. 17). Thereafter, driven chiefly by royal ambition, a dozen new buildings, most in marble and all of unusual design, transformed the sanctuary from a regional to international shrine. Samothracian buildings offer new paradigms of Hellenistic architectural and engineering ingenuity in a site-specific context; the Sanctuary of the Great Gods is one of the most innovative Hellenistic sacred places in the eastern Mediterranean.

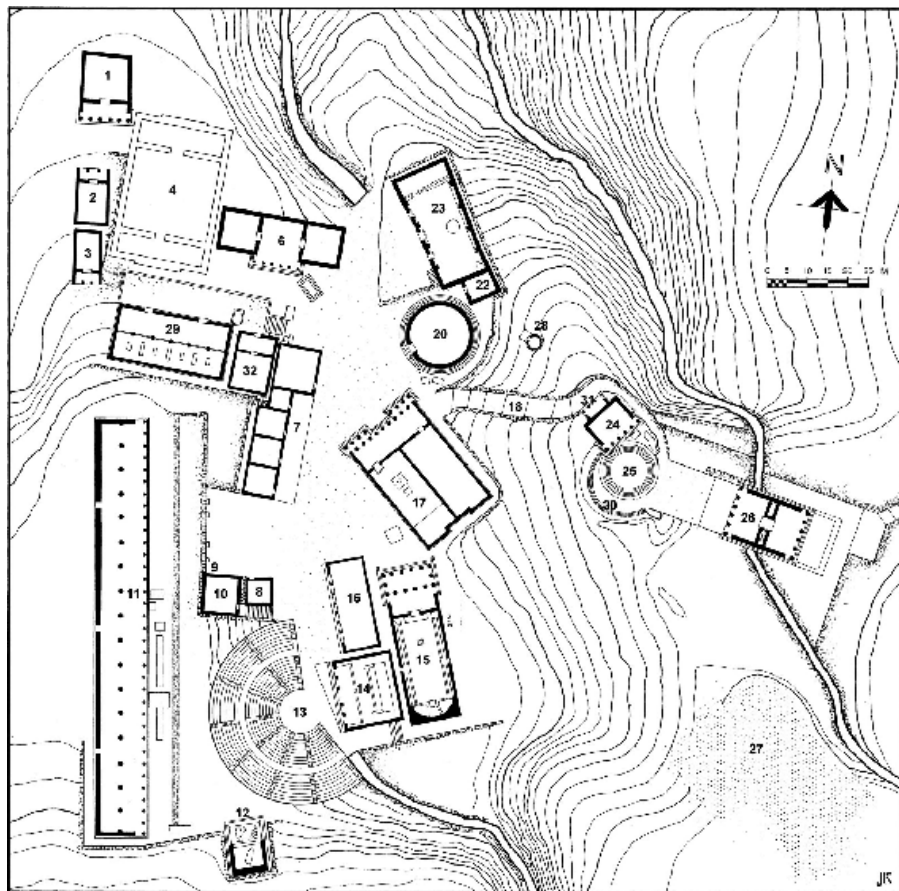


Figure 29.4 Sanctuary of the Great Gods, Samothrace, restored plan. 1, 2, 3. Unidentified late Hellenistic buildings. 4. Unfinished early Hellenistic building. 5. Byzantine Fort. 6. Milesian Banquet Hall. 7, 8, 10. Dining rooms. 9. Faux Bronze Age niche. 11. Stoa. 12. Nike Monument. 13. Theater. 14. Altar Court. 15. Hieron. 16. Hall of Votive Gifts. 17. Hall of Choral Dancers. 18. Sacred Way. 19. Sacred Rock. 20. Rotunda of Arsinoe II. 21. Orthostate structure. 22. Sacristy. 23. Anaktoron. 24. Dedication of Philip III and Alexander IV. 25. Theatral Circle. 26. Propylon of Ptolemy II. 27. Southern Necropolis. 28. Doric Rotunda. 29. Neorion. 30. Stepped retaining wall. 31. Ionic Porch. 32. Hestiatorion.

Source: © American Excavations, Samothrace/ J. Kurtich.

The sanctuary grew up at the convergence of three deep mountain streams on the north coast of the island. The rugged topography generated specific zones within the sanctuary: an elaborate gathering place on the Eastern Hill, the cult buildings sequestered in the narrow central valley, and buildings for social congregation on the Western Hill. Like their counterparts on Rhodes and Kos, architects on Samothrace adeptly manipulated topography and architecture to heighten the sacred experience physically and visually, but here the kinetic

energy worked on a downward, chthonic trajectory. Moreover, descent into the heart of the sanctuary was deliberately circuitous, with monuments, topography, and passages working in concert to conceal or reveal key loci to prospective initiates as they underwent the secret rites that promised protection at sea and moral betterment.

The Propylon of Ptolemy II, gifted by the king in the 280s BCE and prominently bearing his name on both sides, made the experience of entering and leaving the sanctuary especially dramatic (Figure 29.4, no. 26). The architect maximized the experience of descent by raising the Propylon on a massive foundation thrust westward into the ravine; he diverted the stream that formed the boundary of the temenos into a vaulted tunnel that cut through the foundations of the building. The amphiprostyle superstructure of the Propylon is further remarkable in combining an Ionic hexastyle prostyle façade facing outward toward the ancient city with a Corinthian one facing into the sanctuary, connected by walls enlivened with drafted margin masonry. This is one of the earliest appearances of the Corinthian order as a monumental exterior order, possibly contemporary with the Belevi Tomb in Asia Minor, which bears a monumental Corinthian colonnade atop a podium (Frazer 1990: 218–225). But why does Corinthian appear on only one side? Vitruvius (*De arch.* 1.2.4) offers an etiology for the Corinthian order that connects it with the grave; the cyclical life of the acanthus plant carries symbolic overtones of regeneration. The Corinthian façade faced into the sanctuary and therefore was best appreciated when leaving; perhaps it was intended to signal passage into a world of different prospects for the newly initiated. Such would be Hellenistic architecture at its most evocative (Wescoat 2012).

From the Propylon, a wide, stepped ramp plunged precipitously into the Theatral Circle (Figure 29.4, no. 25), where banks of statues and the sanctuary's first Hellenistic building, a Doric hexastyle pavilion dedicated by Philip III and Alexander IV, formed a visual screen for the cult buildings below (Figure 29.4, no. 24). Pilgrims then circumnavigated the rim of the ravine to descend another steep ramp to the narrow valley with the cult buildings, also only serially revealed. Such manipulation of charged topographic features marks a new level of intervention in the landscape.

The main cult buildings were densely grouped in the narrow valley forming the heart of the sanctuary, with the Hall of Choral Dancers in the center (Figure 29.4, no. 17). Its winged prostoon with slender Ionic columns gave passage to two deep chambers; the entirety was circumscribed by an entablature including dentils and, notably, a frieze of dancing maidens in archaistic style. Tucked behind the hall rose the Hieron, with its long cella and deep Doric hexastyle prostyle porch with two rows of columns (Figure 29.4, no. 15). The main building is probably later than circa 325 BCE; and, the second-century BCE date proposed for the porch, based on West Slope ware

pottery and classicistic style, could perhaps be pushed back to the third century BCE (P.W. Lehmann 1969: 84–93, 208–236; K. Lehmann 1998: 79–86; des Courtils 1999: 366–368). Like the Propylon, its exterior walls bore drafted margin masonry; the interior offered a more colorful version in plaster. The deep porch, benches lining the sides, internal apse, eschara (hearth for small burnt offerings), drain, and side doors suggest the building, as well as the Hall of Choral Dancers, was connected with the most sacred aspects of the cult, even if we cannot specifically define them.

The Rotunda of Arsinoë II, which had the greatest unobstructed span of any Greek round building, claimed pride of place at the base of the Sacred Way (Figure 29.4, no. 20). Scholars disagree on whether the building was built between 288 and 281 BCE, when Arsinoë was married to Lysimachos, or between 276 and 270 BCE, when she returned to Egypt and was married to Ptolemy II (K. Lehmann 1998: 62–70; McCredie 1992: 16, 93, 231–239). Her Rotunda exploited the orders by combining a Doric exterior with a Corinthian interior, here applied to a gallery surmounting a tall, smooth drum. The Doric pilasters framed a faux parapet decorated with boukrania and rosettes, supporting an entablature proportioned to the scale of the entire building (Figure 29.5). The Corinthian half columns framed engaged altars decorated with pairs of boukrania or phialai. A conical roof with scale-shaped tiles crowned the whole. The unusual design of the Rotunda was carefully calibrated to its location. From the valley floor it presented a formidably closed structure, but from the higher vantages of the stoa or Sacred Way, the gallery operated visually like a traditional tholos. The play of order, scale, and topography distinguish Hellenistic architectural thinking. The Rotunda's form may have derived from cultic actions, but its function remains obscure.



Figure 29.5 Rotunda of Arsinoe II, exterior gallery parapet decorated with boukrania, rosette, and sash, the last perhaps connected specifically to the cult of the Samothracian mysteries.

Source: Bonna D. Wescoat.

To the west, a theater and dining rooms lined the slopes (Figure 29.4, nos. 7, 8, 10, and 13), while above stood the 104-m-long, mid-third-century BCE stoa, constructed in local stone and framing the western side of the sanctuary along the ridge of the hill (Figure 29.4, no. 11). This region housed the finest dedications to the Great Gods, including the second-century BCE Winged Victory poised atop the prow of a ship (now in the Louvre; Figure 29.4, no. 12). Set at the highest vantage and rising over 5.5 m tall, the statue would have been visible across the sanctuary. Although no longer thought to be part of a fountain, the statue's wings and windblown drapery respond to the prevailing winds, and the contrast between the luminous Parian marble statue and the dark blue Lartian marble ship create a powerful aesthetic rooted in the phenomenon of place (Hamiaux 2001; 2007). On a lower terrace stood another remarkable naval monument, a Neorion designed to accommodate an entire votive ship (Figure 29.4, no. 29). Such buildings are very rare; the Monument of the Bulls on Delos appears to have a similar function, although a different design (Wescoat 2005; Bruneau and Ducat 2005: 191–193). Yet another distinctive Samothracian building is the Banquet Hall donated by a woman from the city of Miletos (Figure 29.4, no. 6). It consists of a marble Ionic hexastyle prostyle pavilion flanked by wings entered through offset doorways. The three-room arrangement finds parallel in Macedonian royal palaces for example, Vergina, and elite houses at Pella, as part of the larger

structure, although Nielsen questions the grouping generally (1999: 87–88).

Throughout the sanctuary, massive polygonal boulder walls retain the terraces and channels, blending with the environment so that the buildings appear to emerge seamlessly within a natural sacred glen. They give the sanctuary a venerable aspect that is enhanced by other archaisms. The faux-Mycenaean niche built into a terrace wall intentionally conjures up a Bronze Age past connected to the mythical foundations of the cult (Figure 29.4, no. 9), and the archaistic frieze of dancing maidens decorating the Hall of Choral Dancers alludes to an earlier sculptural style. Thus, while engaging the most innovative designs of the period, the Samothracians, like the Lindians and the Koans, also invested their sanctuary with a historicity and ancient aura.

Smaller-Scale Urban and Suburban Precincts: Priene, Megalopolis, and Pergamon

While the orchestrated, multilevel sanctuaries at Lindos, Kos, and Samothrace offer splendid but highly individual expressions of Hellenistic sacred space, dozens of smaller sanctuaries give Hellenistic design its overarching imprint. Inspired by parallel developments in urban planning (see Chapter 17), these sanctuaries share several characteristics, the most striking being orthogonal organization of the components within a rectilinear temenos. The idea appears already in the fourth century with the Sanctuary of Athena in the city of Priene, where the urban grid shapes the sacred precinct and determines the temple's alignment. The sanctuary adjacent to the agora of Priene (to Zeus or Asklepios) works even more emphatically within the grid system. The enclosed temenos has a small Ionic temple (either tetrastyle prostyle or distyle in antis; Ferla 2005: 112–124) set at the back of the precinct and framed north and south by Doric stoas of a smaller scale. Although orthogonally organized, the formal arrangement is not axially symmetrical. However, the late fourth-century Sanctuary of Zeus Soter at Megalopolis, designed as an independent complex in a large urban scheme, does operate bilaterally along a central axis. Its Doric hexastyle temple is fused with the surrounding peristyle court; only the columnar façade projects beyond the architectural frame (Lauter-Bufe 2009).

The quintessentially Hellenistic design of the (originally) suburban Sanctuary of Demeter at Pergamon was realized in the major elaborations that Apollonis, wife of Attalos I, introduced in the second half of the third century to the original sanctuary (a distyle in antis temple and altar) established by Philetairos and Eumenes earlier in the century in honor of their mother, Boa (Figure 29.6; Bohtz 1981; Plok Zanon 2007). A massive western retaining wall supported a long, level precinct, with framing stoas, enclosure wall,

propylon, and a bank of seats that allowed participants to witness the secret rites, which presumably were enacted in the area in front of the altar. The narrowness of the precinct heightened the spatial tension between the spectator area, the altar, and the temple. On the main level the structures defined an inwardly focused space, but from the top steps and the upper north stoa, viewers could look down on the precinct or beyond to the great expanse of the lower city. The narrow precinct and orthogonal arrangement of components – temple, theatron, and stoa – bring to mind the Hellenistic Sanctuary of Despoina at Lycosura, although the shrine in the remote Arcadian highlands was not enclosed. Within these diverse designs we witness an overarching interest in framing space, organizing along orthogonal principles, creating complexes rather than individual structures, and manipulating scale to create internal hierarchies.

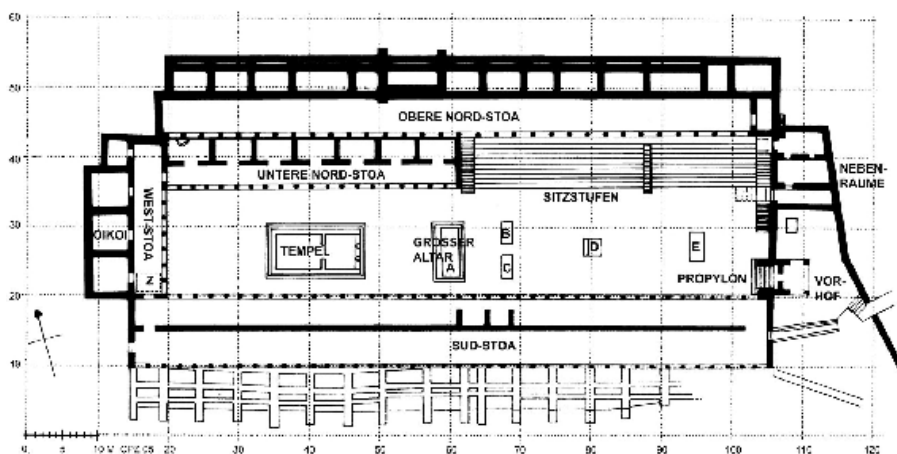


Figure 29.6 Sanctuary of Demeter, Pergamon, plan.

Drawing by Cornelia Piok Zanon. *Source:* C. Piok Zanon.

Hellenistic Interventions in the Old Sanctuaries: Stoa and Votive Monuments

Although largely built up by the late Classical period, the older international sanctuaries of Greece remained highly visible centers where personal, dynastic, or commemorative monuments effectively promoted the aims of the donor. A favorite Hellenistic building type, the stoa, not only provided sheltered gathering spaces in these Panhellenic sanctuaries but also helped to frame their sacred precincts and shape human actions. The Hellenistic stoas added to either side of the Sanctuary of Apollo at Delphi expanded the limits of the temenos with buildings that also served as victory monuments. The West Stoa once held captured Gallic arms dedicated by the Aetolians, who

drove the Gauls out of the sanctuary in 278 BCE. A pendant stoa donated by Attalos I (241–223 BCE), which breaks through the ancient temenos wall to expand the sacred precinct to the east, was likely erected to honor his victories over the Gauls. Its substructure, a subterranean exedra bearing a barrel-valuted roof, demonstrates the facility of Pergamene architects in handling multiple stories and steep terrain. The Antigonid dynasty built stoas on the sacred island of Delos that dramatically transformed the loose-knit temenos of Apollo into a more integrated sacred space. The stoa with projecting wings donated by Antigonos Gonatas (246–239 BCE) spatially defined the north side of Apollo's precinct, its wings effectively framing the temenos. The bull's heads decorating its triglyphs tie the building iconographically to the nearby Monument of the Bulls, an early-third-century-BCE dedication of extraordinary dimensions and decoration (see below). Just outside the temenos, the South Stoa (circa 270–230 BCE) and the Stoa of Philip V (original construction, circa 216–200 BCE) combined to create a monumental processional passage from the harbor and Agora of the Competaliasts to the entrance of the sanctuary ([Figure 29.7](#)). At Olympia, the back side of the enormously long (212 m) East Stoa of the Gymnasion, built in the second century, further defined the processional route entering the sanctuary of Zeus.



Figure 29.7 Delos, view over houses toward the Sanctuary of Apollo, with the Stoa of Philip V and South Stoa framing a processional way at center right.

Source: M.M. Miles.

Personal, dynastic, and commemorative monuments also left a strong

Hellenistic imprint on the older sanctuaries. A particularly impressive form of dedication that developed in the third century consisted of a portrait statue set on a monumental column. At Olympia, the monument honoring Ptolemy II and his sister-queen, Arsinoë II, included a long base with Ionic columns set at the ends, each crowned with a portrait statue. In the middle of the third century at Delphi, the wealthy private woman Aristaineta set up an Ionic double column monument, which excerpted the entire elevation of an Ionic peripteros, including steps, a pair of closely set columns, and a combined entablature, crowned with statues representing Aristaineta, her parents, and her son. Doric column monuments were equally popular dedications; the Macedonians erected one in honor of Philip V in front of the stoa at Samothrace. Although bulkier, Hellenistic pillar monuments served a similar purpose. Several stood on the terrace before the temple at Delphi, one honoring Eumenes II of Pergamon and another Prusias of Bithynia. A third was originally begun to honor Perseus of Macedonia, but Aemilius Paullus expropriated the monument after his victory at the Battle of Pydna, recrafting the frieze to represent his victory over Perseus and placing an equestrian statue of himself on top.

Hellenistic Directions in Sacred Architectural Sculpture

The sculptural decoration of sacred buildings continued in the Hellenistic period, but with different emphases. While a wider range of buildings and building elements were adorned, the subjects and complexity of composition were more limited, with the important exception of altar decoration. In the latter, Hellenistic architects brought sculpture more immediately into the space and experience of the viewer by introducing monumental figures in high relief set closer to eye level and using colonnades as structuring frames for the display of large-scale statues (e.g., altars from Pergamon, Priene, Kos, and Magnesia). Venerable iconographic themes (e.g., Amazonomachy, gigantomachy, centauromachy, and Iliouperisis) continued to find a place along with the occasionally site-specific narrative (e.g., on the Temple of Hekate at Lagina). The temples of Dionysos at Teos and Knidos bore predictably Dionysiac motifs, as did the altar connected with his worship on Kos. The pedimental sculpture of the Hieron on Samothrace seems to be connected with the local cult as well, although fixing on the theme remains difficult (P.W. Lehmann 1969: 253–317). The lavish sculptural adornment of the Monument of the Bulls on Delos matched the building's innovative architectural design; nearly every part of the building bore sculptural decoration, including a marine thiasos frieze, sculptured metopes, akroteria, a

Celtomachy decorating the lantern, and the bull protome capitals that give the building its name (in general, Webb 1996).

Increasingly, non-narrative, symbolic imagery connected with sacrifice or victory, including boukrania, phialai, rosettes, garlands, tripods, and captured arms, was knit into temples, altars, stoas, propyla, and other buildings within sanctuaries (e.g., Temple of Demeter, Pergamon, or the Rotunda of Arsinoë and Propylon of Ptolemy II at Samothrace). Occasionally, these symbols were accompanied by representations of specific cult objects (Miles 2012: 129–143). Vegetation figures, usually the upper half of a winged woman wearing a polos and emerging from floral elements, now enlivened compositions that previously were purely floral (e.g., the frieze and akroterion of the Temple of Artemis at Magnesia). Symbols connected with the divinity also became architectural motifs: at the Temple of Apollo at Didyma, griffins and lyres ran in a rinceaux frieze across the pilaster capitals of the inner precinct; at the Temple of Artemis Leukophryene at Magnesia (see [Figures 31.1](#), [31.2](#)), deer heads replaced boukrania in the opisthodomos frieze. On the whole, the symbolic imagery reflects a preference for definition rather than allegory; it signaled purpose or communicated place in a decorous manner that merged seamlessly with more abstract architectural ornament.

Responses to the Larger Hellenistic World: The Sanctuaries of Foreign Gods and Sanctuaries in Foreign lands

We have chiefly addressed sanctuaries in the heartland of Greece; other essays in this volume address the architectural connections between Greece and Italy (see [Chapter 31](#) and [Chapter 32](#)). A signal feature of the era, however, was the Greco-Macedonian encounter with other cultures encompassed by Alexander's empire. Sanctuary architecture provides an important point of mediation demonstrating how these cultures interacted with and affected one another. Ptolemaic rulers built in both the Greek (e.g., Sanctuary at Hermopolis Magna) and Egyptian style (e.g., temple complexes at Philae and Edfu), depending on the location or divinity honored (McKenzie 2007: 56–58, 119–146). The Temple of Indented Niches at Ai-Khanoum in modern Afghanistan, once part of the Seleucid Empire, represents a grafting of Greek influences on native Near Eastern forms (Mairs 2013). A particularly successful synthesis of Hellenic and Egyptian traditions obtained in the sanctuaries of Serapis, a god invented by Ptolemy I as a union of the Egyptian gods, Apis and Osiris, and the Greek Olympian, Hades; he also became associated with Asklepios and Dionysos. The Serapeion in Alexandria (built by Ptolemy III Euergetes, 246–221 BCE) consisted of a rectangular

colonnaded court entered on the long side through two tetrastyle prostyle propyla. At the northern end, but off the central axis, stood a small tetrastyle prostyle temple that combined Corinthian columns with a Doric triglyph frieze. The precinct contained additional buildings, some of which were connected by a subterranean passage. Outside the temenos, a stairway led to the Nilometer, which measured the level of the annual flood.

Cults of foreign gods found particular traction at the Hellenistic emporion of Delos. The tiny island had three Serapeia as well as a sanctuary of the Syrian gods, all architecturally distinct from the classical Sanctuary of Apollo. Serapeia A and B were a loose collection of rooms, but the grander Serapeion C, built around 180 BCE, operated around two courtyards; the northern one had a tetrastyle prostyle temple, and the southern had a long narrow, trapezoidally shaped colonnaded court, with an internal avenue of altars alternating with sphinxes leading to a small temple. The precinct of the nearby Sanctuary of the Syrian Gods, built by Diophantos, son of Alexandros, to honor Atargatis and Hadad (second century BCE), ran along a terrace enclosed with an inward facing portico; a cult theater framed at the top by a pi-shaped portico faced onto the terrace and was aligned with a small exedra. The design of these shrines reflects architectural influences from the Ptolemaic and Seleucid kingdoms, but traditional Greek elements continued to find a place. Within Serapeion C, the Athenians (after 166 BCE) donated a small temple to the Egyptian goddess Isis, its marble Doric façade with two tall columns in antis supporting a light entablature, now with mutules decorating the raking cornice.

Conclusions

For scholars who admire the splendid isolation (real or imagined) of the Archaic or Classical temple, Hellenistic sanctuary design appears oppressively controlling (Kostoff 1985: 170–174). It is also found guilty of artificiality, exaggerated self-display, staginess, and histrionic overacting: in short, theatricality. For some, theatricality means an imitation of the experience ancient Greeks had long enjoyed at the theater (Spawforth 2006: 85). More frequently, it has the decidedly pejorative overtones of secularizing and trivializing authentic religious experience: the awe generated by the great Archaic temples degenerated into touristic thrill (Pollitt 1986: 230).

Were Hellenistic architects and patrons really that cynical? Spiritual motives are always difficult to tease out of archaeological data, and sanctuaries were from their inception religious centers that attracted pilgrims who were also tourists (witness the chorus in Euripides' *Ion*). However, we have no basis for claiming that the deft manipulation of sacred space in the Hellenistic period was staged merely to thrill passersby rather than to heighten their religious

experience. Hellenistic sacred architecture foregrounds the participant, and it is best understood within the context of the human actions and experiences – festivals, sacrifices, processions, and other rites – that it aimed to shape. These experiences differ fundamentally from theater; the pilgrim is a participant as well as a witness. The most ingenious aspects of Hellenistic sanctuary design – exploiting the natural environment, shaping the temporal and spatial experience of the sacred space, employing multiple orders and hierarchies of scale to guide the pilgrim from one station to the next – are all governed by the overarching aim of achieving the sensory effects that might generate the awe and wonder vital to a successful encounter with divine forces. Hellenistic sanctuary design works to build expectations and create heightened emotional responses through sudden or striking (i.e., dramatic) effects. These strategies remain in the service of fundamental religious aims that are no less authentic for having been architectonically embraced.

FURTHER READING

Wescoat and Ousterhout 2012, on sacred space, has essays by Miles, Hollinshead, and Wescoat that examine the dynamics of sacred space, ritual, and experience in Hellenistic contexts. Hollinshead's ideas are expanded in her 2015 book on monumental steps and the shaping of ceremony. For Hellenistic architecture, Lauter 1986, approaches buildings typologically while addressing guiding design principles; on sanctuaries, Felten 1996. Winter's approach is also typological, but his chronology does not always reflect current research and some assumptions, especially concerning patronage, often go beyond the available evidence (1993, 2006). Coulton 1976 remains essential reading on the stoa. For a fresh examination of Hellenistic and Roman design theory and practice, see most recently Senseney 2011. In otherwise excellent books devoted to the Hellenistic period, for example Pollitt 1986, discussion of architecture tends to be abbreviated; see also Onians 1979, 1988. Although dated, Martin 1973 still offers a richly written history of Hellenistic sacred architecture. The foundational resources remain the excavation volumes addressing individual buildings or complexes within sanctuaries, e.g., at Lindos, Kos, Samothrace, Pergamon, Megalopolis, Priene, or Delos. For Lindos, they are augmented by Lippolis 1988–1989, and at Kos, by Sherwin-White 1978, Senseney 2007 and Interdonato 2013. New material has been presented in guides to the sites at Samothrace (K. Lehmann 1998) and Delos (Bruneau and Ducat 2005). See also Wescoat 2010 for excavation history of Samothrace.

REFERENCES

Alston, R. and O. van Nijf, eds. 2013. *Cults, Creeds, and Contests in the Post-Classical City*. Leuven.

Blakolmer, F., K.R. Krierer, F. Krinzinger, et al., eds. 1996. *Fremde Zeiten: Festschrift für Jürgen Borchhardt zum sechzigsten Geburtstag am 25. Februar 1996*. Vol. 2. Vienna.

Bohtz, C.H. 1981. *Altertümer von Pergamon. Vol. XIII: Das Demeter-Heiligtum*. Berlin.

Bruneau, P., and J. Ducat. 2005. *Guide de Délos*. 4th ed. Athens.

Burkert, W. 1993. "Concordia discors: The Literary and the Archaeological Evidence on the Sanctuary of Samothrace." In Marinatos and Hägg, eds., 178–191.

Charbonneaux, J., R. Martin, and F. Villard, eds. 1973. *Hellenistic Art, (330–50 B.C.)*. New York.

Coulton, J.J. 1976. *The Architectural Development of the Greek Stoa*. Oxford.

Des Courtils, J. 1999. "Thasos, Samothrace, et l'architecture Macedonienne." *Ancient Macedonia*, 6 (1): 357–374.

Dyggve, E. and V. Poulsen. 1960. *Fouilles de l'Acropole, 1902–1914 et 1952. Vol. III.2: Le sanctuaire d'Athana Lindia et l'architecture lindienne*. Copenhagen.

Felten, F. 1996. "Griechische Heiligtümer in hellenistischer Zeit," In *Fremde Zeiten: Festschrift für Jürgen Borchhardt zum sechzigsten Geburtstag am 25. Februar 1996*. Vol. 2, edited by F. Blakolmer, K. R. Krierer, F. Krinzinger, A. Landskron-Dinstl, H. D. Szemethy, and K. Zhuber-Okrog, pp. 139–158, Vienna.

Ferla, K., ed. 2005. *Priene*. 2nd ed. Athens.

Frazer, A. 1990. *Samothrace. Vol. 10: The Propylon of Ptolemy II*. Princeton.

Gabrielsen, V. 1997. *The Naval Aristocracy of Hellenistic Rhodes*. Aarhus.

Hamiaux, M. 2001. "La Victoire de Samothrace. Découverte et restauration," *JS*, 152–223.

Hamiaux, M. 2007. *La Victoire de Samothrace*. Paris.

Higbie, C. 2003. *The Lindian Chronicle and the Greek Creation of their Past*. Oxford.

Hollinshead, M. 2012. "Monumental Steps and the Shaping of Ceremony." In Wescoat and Ousterhout, eds., 27–65.

Hollinshead, M. 2015. *Shaping Ceremony; Monumental Steps and Greek Architecture*. Madison, WI.

Interdonato, E. 2013. L' Asklepieion di Kos: archeologia del culto. *Suppl.ArchCl* 12, n.s. 9. Rome.

Kostoff, S. 1985. *A History of Architecture: Settings and Rituals*. Oxford.

Lauter, H. 1986. *Die Architektur des Hellenismus*. Darmstadt.

Lauter-Bufe, H. 2009. *Das Heiligtum des Zeus Soter in Megalopolis*. Mainz am Rhein.

Lehmann, K. 1998. *Samothrace: A Guide to the Excavations and the Museum*. 6th ed. Revised by J.R. McCredie. Thessaloniki.

Lehmann, P.W. 1969. *Samothrace. Vol. 3: The Hieron*. Princeton.

Linfert, A. 1995. "Prunkaltäre." In Wörrle and Zanker, eds., 131–146.

Lippolis, E. 1988–1989. "Il santuario di Athana a Lindo." *ASAA*, 48–49: 97–157.

Mairs, R. 2013. "The 'Temple with Indented Niches' at Ai Khanoum: Ethnic and Civic Identity in Hellenistic Bactria." In Alston and van Nijf, eds., 85–118.

Marinatos, N. and R. Hägg, eds. 1993. *Greek Sanctuaries: New Approaches*. London.

Martin, R. 1973. "Architecture." In Charbonneaux, Martin, and Villard, eds., 1–94.

McCredie, J.R. 1992. *Samothrace. Vol. 7: The Rotunda*. Princeton.

McKenzie, J. 2007. *The Architecture of Alexandria and Egypt, c. 300 BC to AD 700*. New Haven.

Miles, M.M. 2012. "Entering Demeter's Gateway: The Roman Propylon in the City Eleusinion." In Wescoat and Ousterhout, eds., 114–151.

Nielsen, I. 1999. *Hellenistic Palaces*. Aarhus.

Onians, J. 1979. *Art and Thought in the Hellenistic Age; the Greek World View 350–50 BC*. London.

Onians, J. 1988. *Bearers of Meaning: The Classical Orders in Antiquity, the Middle Ages, and the Renaissance*. Princeton.

Palagia, O. and B.D. Wescoat, eds. 2010. *Samothracian Connections: Essays in Honor of James R. McCredie*. Oxford, 5–32.

Piok Zanon, C.P. 2007. “Dank an Demeter: Neue Gedanken zu Architektur und Bedeutung des Demeter-Kultes in Pergamon im späten 3.Jh.v.Chr.” *MDAI(I)* 57: 323–364.

Pollitt, J.J. 1986. *Art in the Hellenistic Age*. Cambridge. Schazmann, P. and R. Herzog. 1932 *Kos: Ergebnisse der deutschen Ausgrabungen und Forschungen I. Asklepieion, Baubeschreibung und Baugeschichte*. Berlin.

Senseney, J.R. 2007. “Idea and Visuality in Hellenistic Architecture: A Geometrical Analysis of Temple A of the Asklepieion at Kos.” *AJA* 76: 555–595.

Senseney, J.R. 2011. *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture*. New York.

Shaya J. 2005. “The Greek Temple as Museum: The Case of the Legendary Treasury of Athena from Lindos.” *AJA* 109: 423–442.

Sherwin-White, S.M. 1978. *Ancient Cos: An Historical Study from the Dorian Settlement to the Imperial Period*. Göttingen.

Spawforth, A.J.S. 2006. *The Complete Greek Temples*. New York.

Tomlinson, R.A. 1963. “The Doric Order: Hellenistic Critics and Criticism.” *JHS* 83: 133–145.

Webb, P. 1996. *Hellenistic Architectural Sculpture: Figural Motifs in Western Anatolia and the Aegean Islands*. Madison, WI.

Wescoat, B.D. 2005. “Buildings for votive ships on Delos and Samothrace.” In Yeroulanou and Stamatopoulou, eds., 153–172.

Wescoat, B.D. 2010. “James R. McCredie and Samothracian Architecture.” In Palagia and Wescoat, eds., 5–32.

Wescoat, B.D. 2012. “Coming and Going in the Sanctuary of the Great Gods on Samothrace.” In Wescoat and Ouserhout, eds. 66–113.

Wescoat, B.D. and R.G. Ousterhout, eds. 2012. *Architecture of the Sacred: Space, Ritual, and Experience from Classical Greece to Byzantium*. New York.

Winter, F.E. 1993. "The Role of Royal Patronage in the Development of Hellenistic Architecture." *EMC*, 12: 251–281.

Winter, F.E. 2006. *Studies in Hellenistic Architecture*. Phoenix, Suppl. 42. Toronto.

Wörle, M. and P. Zanker, eds. 1995. *Stadt und Bürger im Hellenismus*. Kolloquium, München 24. bis 26. Juni 1993. Munich.

Yeroulanou, M. and M. Stamatopoulou, eds. 2005. *Architecture and Archaeology in the Cyclades: Papers in Honour of J.J Coulton*. Oxford.

CHAPTER 30

Three Seaside Wonders: Pharos, Mausoleum and Colossus

Ingrid D. Rowland

Seven Sights or Seven Wonders?

Like most ancient lists, from the dozen or so Nine Muses to the nine-odd Seven Sages, the Seven Wonders of the World had many more candidates for the distinction than seven. The standard modern list only became standard in 1721, when the Austrian Imperial architect Johann Bernhard Fischer von Erlach produced marvelous Baroque engravings of the Pyramids of Egypt, the Hanging Gardens of Babylon, the Temple of Artemis at Ephesos, the statue of Zeus at Olympia, the Mausoleum of Halikarnassos, the Colossus of Rhodes, and the Lighthouse of Alexandria as part of his comprehensive *Outline for an Historical Architecture* (*Entwurf einer Historischen Architektur*). The idea of the Seven Wonders, on the other hand, was genuinely ancient. Herodotus, writing in the fifth century BCE, mentions several of these monuments, and the earliest lists of seven seem to have been drawn up during the Hellenistic Age. The ancient textual tradition preserves eight different honor rolls of “seven sights to see” (εἰς ἑπτὰ θεάματα in Greek, *septem spectacula* in Latin), as well as a number of partial rosters preserved in papyrus or manuscript (Hornblower 1982: 233–234). Frequent alternative candidates for the Seven Sights to See included the Walls of Babylon, a Babylonian ziggurat described by later writers as a tower or obelisk, and the Palace of Cyrus at Ecbatana in Persia. No matter their differences in detail, the lists always concentrate exclusively on works of architecture and sculpture; wonders of nature evidently exerted a less powerful pull on Hellenistic imaginations than did the fruits of human labor.

The *theamata* (*spectacula* in Latin) were large, shiny, and expensive, all qualities much sought after by ancient tourists, artists, patrons, and critics. Importantly, too, the wonders, scattered across a vast geographic area including Egypt, Mesopotamia, Persia, Caria, and Greece, reflected an international, intercontinental Mediterranean world. As a further clue to the dating of these heptads, all the individual *theamata* themselves were created before the rise of Rome to international prominence in the mid-second century BCE. Women commissioned three of the Seven: Semiramis of Babylon ordered the Walls of Babylon and the Hanging Gardens, and Artemisia,

Queen of Caria, sponsored the Mausoleum of Halikarnassos.

The Seven Wonders of the World may always have existed more as a romantic idea than as a serious tourist's itinerary, but intrepid travelers did seek them out as such. One Lebanese-born Greek, Antipater of Sidon, brags in the mid-second century BCE of having seen all seven, and being a better man for the experience:

I have gazed on the walls of impregnable Babylon, along which chariots may race, and on the Zeus by the banks of the Alpheios. I have seen the Hanging Gardens and the Colossus of Helios, the great man-made mountains of the lofty pyramids, and the gigantic tomb of Maussollos. But when I saw the sacred house of Artemis that towers to the clouds, the others were placed in the shade, for the sun himself has never looked upon its equal outside Olympus.

(*Anth. Pal.* 9.58, trans. Clayton and Price 1989: 12)

Antipater's list includes the Walls of Babylon rather than the Lighthouse of Alexandria, which may not have been built at the time he wrote (it was completed in about 250 BCE). And writers continued to use this list even after the construction of the lighthouse, like the fourth-century CE author whose work has passed down under the name "Philo of Byzantium" (also a late third-century BCE writer on mechanics). The pseudo-Philo's version of the Seven Wonders continued to prevail through the seventeenth century thanks to a critical edition of the text produced by the Greek-born Vatican librarian Leone Allacci in 1640 (Allacci 1640). This edition, in turn, inspired Allacci's friend Father Athanasius Kircher to discuss the wonders in his spectacular picture book, *Turris Babel*, of 1679, the last word on the Seven Wonders before Fischer von Erlach brought them into something resembling the modern world (Kircher 1679). The monuments that comprise our standard list of wonders, including the Lighthouse of Alexandria, existed as an intact group for less than a generation, for the Colossus of Rhodes collapsed in an earthquake in 226 BCE, twenty or thirty years after completion of the Lighthouse in Alexandria. The date of this early collapse suggests that the first standard list of Seven Sights to See may have been drawn up between 250 and 226 BCE. These middle decades of the third century provided an especially favorable temporal and cultural environment for an idea like that of the Seven Sights, linking diverse cultures, histories, and continents in a shared vision of the world that had particular appeal in the wake of Alexander the Great's far-flung conquests.

Vision is certainly the faculty that these seven monuments engaged most actively: ancient writers consistently characterized them as things to be seen, theamata, rather than things to be marveled at, *thaumata* or *mirabilia*. The wonderment, as we shall see, came with the Christian era and late antiquity.

Structurally speaking, the architectural sights were mostly huge piles of

masonry: mudbrick for Babylon's walls and towers, and stone for the Pyramids of Egypt and the great buildings of Greece and Persia. Roman concrete, with its marvelous lightness, soaring vaults, hollow spaces, and fantastic shapes, had yet to appear on the horizon. Seaside constructions like the Mausoleum of Halikarnassos, the Colossus of Rhodes, and the Lighthouse of Alexandria were all built without the help of hydraulic cement, a material that the ancient author Vitruvius praised as a wonder of the world in its own right. The secret ingredient of Roman concrete, the volcanic stone called *pozzolana*, came from Italy, and that peninsula is conspicuously absent from the map of wonders, along with Sicily, whose gigantic Greek temples would surely have qualified for inclusion on the list of world-renowned "things to see" had they not been toppled by war or earthquake earlier – yet another indication that the Seven Wonders are a distinctively Hellenistic concept, preserved in their Hellenistic integrity by respectful Roman writers like Varro, Vitruvius, Pliny the Elder, Diodorus Siculus, and the late Antique writer Philo of Byzantium.

Greek artists are prominent among the makers of the Seven Sights, yet another indication that the list derives from the third-century Hellenistic world. Greeks created the Temple of Artemis, the Statue of Zeus, the Mausoleum of Halikarnassos, the Colossus of Rhodes, and the Lighthouse of Alexandria. Most of these craftsmen, moreover, belonged to a particular group of Greeks: Ionians from the southwest coast of Asia Minor, part of an active, influential "Ionian Renaissance" that sprung up in this region in the fourth and third centuries BCE, a generation or two before the rise of Alexander the Great. As we shall see, no fewer than four of the Seven Wonders (i.e., the Mausoleum, the rebuilt Temple of Artemis, the Colossus, and the Lighthouse) take us into the heart of this Ionian world, an area perpetually poised between the competing cultures of Greece and Persia.

The Mausoleum of Halikarnassos (circa 350 BCE)

It was in Ionia, a zone locked between the Greek Aegean and the Persian mainland, that a shrewd local ruler named Hekatomnos of Caria maneuvered himself and his family into a brilliant political position early in the fourth century. All around him, the traditional balances of power were in flux. Athens, the chief naval power of fifth-century Greece, had come to grief in its war against Sparta, but then the invincible Spartans had shown themselves incapable of ruling an empire. Ever watchful and immensely powerful, the Great King of Persia had taken advantage of the confusion to move in on Ionia as his ancestors had done in previous centuries. But the Persian generals

he had set in place as satraps, or provincial governors, had proven too ambitious on their own accounts and hence troublesome for the monarch. The king was ready to try awarding satrapies to local rulers, among them Hekatomnos of Caria, smart, opportunistic, and far-sighted; not only did he himself serve as satrap from 395 to 377 BCE, but he also ensured that every one of his four children would eventually rule as satraps of the Persian Empire as well as monarchs of Caria (see [Chapter 27](#); Karlsson and Carlsson 2011).

Culturally, the Hekatomnids were more Greek than Persian, but they continued to maintain some ancestral customs, of which the most exotic to Greek eyes was marriage between siblings. Like the pharaohs of Egypt, the kings of Caria would marry only royal spouses, and the four children of Hekatomnos solved the problem by marrying each other: the eldest son, Maussollos, married his sister Artemisia, and their brother Idrieus married their sister Ada. Shortly after ascending the Carian throne himself in 377, Maussollos decided to move his capital from inland Mylasa to Halikarnassos, a coastal city that had been founded half a millennium earlier by Greek colonists from Troezen in the northern Peloponnese and was home, by the fourth century, to a cosmopolitan, mixed Greek and Carian population. Halikarnassos may have been most famous as the birthplace of the historian Herodotus, but it was also a splendid port, situated along the trade route that passed from Egypt to Crete, Rhodes, and on to Ephesos.

Together with an Ionian Greek architect, Pytheos, Maussollos transformed old Halikarnassos into a modern fourth-century capital, liberally spending the Persian money he earned through his satrapy and the vast funds he amassed through his other activities, including warfare, trade, piracy, and, as his subjects complained, outright larceny. In addition to improving fortification walls, harbor facilities, public buildings, and city streets, he commandeered an old burial ground in the center of Halikarnassos as the site for a monument that would act as his tomb, a shrine, and a tourist attraction all at once: the *Maussolleion*. This descriptive Greek word, which meant nothing more than “the building of Maussollos,” soon became a Latin term in its own right for lavish funeral monuments, but there has never been another mausoleum quite like the Mausoleum of Halikarnassos (see [Chapter 26](#)).

Very little of that wondrous monument survives today. Ancient writers attributed the project to the king’s sister and widow Artemisia, who survived Maussollos for only two years, 353–351 BCE. If she did commission the monument, she is unlikely to have seen much of it built; her first weeks of rule gave her no time to think about anything but survival. Immediately after the death of Maussollos, the islanders of Rhodes tried to take Halikarnassos in a lightning raid, assuming that the queen would be a weaker ruler than her husband, and perhaps hearing about her extravagant expressions of grief, which were probably legendary, as Artemisia could hardly have drunk her husband’s ashes every day if he were buried under the Mausoleum. They must

have forgotten that an earlier Artemisia of Halikarnassos had captained fighting ships at the Battle of Salamis in 480; these Carian women, unlike their Greek counterparts, were used to wielding authority. In any event, the fourth-century Artemisia turned the Rhodian siege of Halikarnassos into a rout, boarded the enemy ships with her own forces, sailed them back to Rhodes, and conquered the would-be-conquerors. Only then, presumably, did she have time to think about a memorial for Maussollos.

The Mausoleum may have been finished in the reign of Idrieus, the couple's younger brother, or perhaps under Alexander the Great, who became a protégé of the last surviving Hekatomnid sibling and ruler, Ada. Some parts of its temenos, or precinct, seem to have been left incomplete. After Alexander's time, the Mausoleum seems to have stood largely intact for well over a thousand years, until a twelfth-century earthquake began to break it apart. The Knights Hospitallers of St. John (also known then as the Knights of Rhodes) began to quarry the crumbling monument for building blocks to reinforce their fortress of St. Peter, part of their last stand in Asia Minor against the Ottoman Turks ([Figure 30.1](#)). In contemporary Italy, the Renaissance may have revived a reverence for the works of antiquity, but on the coast of Turkey these Christian knights threw the Mausoleum's pagan statues into kilns to bake them into lime for whitewash and mortar. An English antiquary, Charles Newton, explored the site on behalf of the British Museum in 1856–1858, and from 1966 to 1977 the Danish archaeologist Kristian Jeppesen led an extensive scientific excavation (Jeppesen 1981–2002). Both the British and Danish expeditions recovered immense quantities of architectural and sculptural remnants from the great Mausoleum. Typically of their respective eras, Newton shipped his finds off to London, where they reside in the British Museum, except for the heavy, undecorated stones he left behind in Malta in 1858 to be incorporated into the Cospicua Docks (Hammond 2009). Jeppesen's discoveries, on the other hand, are displayed in the local museum of Bodrum. Despite Jeppesen's painstaking, well-documented efforts, our understanding of this monument still remains frustratingly conjectural. The pieces are too fragmentary, too worn, and in many cases too poorly documented to compose into an entirely satisfactory whole.



Figure 30.1 Mausoleum of Halikarnassos, inner foundations, Bodrum, Turkey.

Source: M.M. Miles.

Some information about the Mausoleum is certain. It belonged, albeit on an unprecedented scale, to a recognizable class of funerary monuments in Asia Minor, works that adapted Greek artistic forms to indigenous traditions. A probable precedent, for example, is the Nereid Monument from Xanthus, erected circa 380 BCE by the Lycian ruler Erbinna (Arbinas in Greek) and now in the British Museum (it was removed to London not long after the

fragments of the Mausoleum; Sturgeon 2000: 59–60; Jenkins 2006: 186–188; Figure 30.2).

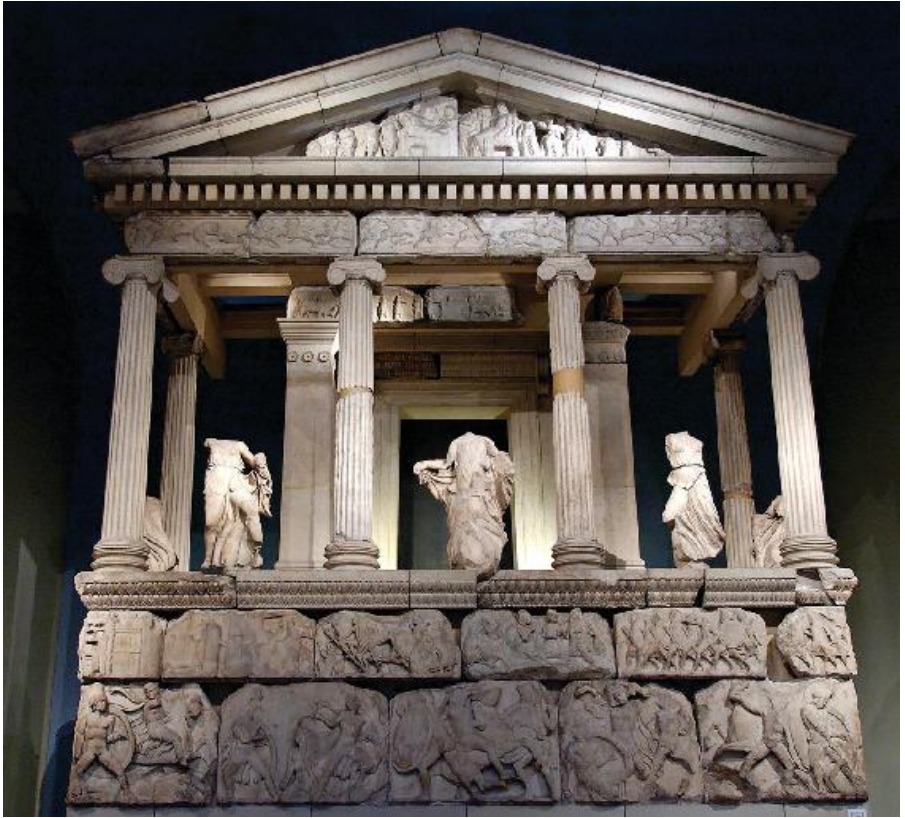


Figure 30.2 Nereid Monument, Xanthos, reconstruction in the British Museum.

Source: Jastrow, [https://commons.wikimedia.org/wiki/](https://commons.wikimedia.org/wiki/File:Reconstruction_Nereid_Monument_BM.jpg)

File:Reconstruction_Nereid_Monument_BM.jpg. CC public domain.

The monument to Maussollos also clearly stood above an underground tomb chamber, rediscovered by the Knights of St. John in 1522. The building's tapered superstructure consisted of solid masonry, topped by a colonnade, surmounted in turn by a stepped pyramid with 24 steps. Both the tomb chamber and the exterior boasted a wealth of sculpture meant not just to rival but specifically to outdo the Parthenon. Like so many works of Greek architecture, the Mausoleum was conceived with two ideal viewpoints in mind: people on the ground in Halikarnassos, of course, but also seafarers in their ships, who might view the city's distinctive new skyline as an impressive statement of its wealth and power, as well as an attractive reason to stop. At the top of the monument stood the man who made it all possible, immortalized in a colossal sculpture as he drove a four-horse chariot against a

background of sky and sun. Was he celebrated as man or god? He may well have been celebrated as both; one theory holds that the crowning sculptural group with Maussollos driving his quadriga was meant to assimilate the king to Helios driving the chariot of the sun.

Jeppesen's excavations at the site of Bodrum have confirmed most of the dimensions given for the monument by the first-century Roman magistrate, admiral, and polymath Pliny the Elder. Pliny reports in his vast, encyclopedic *Natural History* that the Mausoleum's great mass sat on an oblong foundation measuring 440 feet around – and, in fact, if Satyros and Pytheos, the architects, used a foot of 32 cm, as Jeppesen supposes they did, then that dimension is exactly correct. Despite its grandiose scale, the structure's proportions were carefully calibrated: the height of the colonnade, with its 36 columns, equaled the height of the pyramidal cap with its 24 steps, and the whole Mausoleum – not including its crowning charioteer, must have reached an impressive 140 feet into the heavens, just under 45 m.

Above and beyond its tremendous size, however, the Mausoleum impressed contemporaries with the richness of its sculptural decoration, all of which would have been painted and perhaps highlighted with touches of gold or gilded bronze. According to Pliny, whose *Natural History* provides the most detailed surviving account of the monument, Maussollos and Artemisia, or their successors, engaged four different sculptors to work simultaneously: the Greeks Scopas, Leochares, and Timotheos, and the Carian Bryaxis, with the versatile Greek Pytheos contributing the marble chariot group that crowned his whole design (Plin. *NH* 4.36; for more on Pytheos in Pliny, see Robertson 1981: 178 and Carter 1990: 129–136). Pliny reports that each sculptor was assigned one side of the building, a report impossible to validate on the basis of the battered fragments that have survived the depredations of time, weather, vandals, and the Knights of St. John. The Roman writer may well have been thinking of the Colosseum, which was under construction at the very moment when he was writing his *Natural History* and was assigned to four different teams of builders, each one responsible for one quarter of the arena. It was reasonable, therefore, for Pliny to assume that Maussollos and Pytheos might have used a similar system four centuries earlier (Lancaster 2002; 2005). The results of this division of labor can still be seen clearly in the Colosseum (the teams use slightly different techniques and one was notoriously sloppier than the others), but the Mausoleum is too damaged to reach any comparable conclusions about who did what where. Furthermore, each of these four famous sculptors would then have handed assignments to a whole team of craftsmen, each with an individual style. The Parthenon, far better preserved, and with a single overall designer, Pheidias (Plut. *Per.* 13.4), still displays radical differences of technique among its various kinds of sculpture (e.g., metopes, frieze, pediments) and a range of techniques even among the individual types of sculpture. The Mausoleum, sadly, is simply too

battered and too fragmentary to permit identification of single sculptors' hands, however famous those hands might once have been.

The freestanding sculpture from the Mausoleum is executed on three different scales, life size, "heroic" (one and a half times life size), and "colossal" (nearly twice life size). There are also remnants of three continuous friezes carved in relief. The superb quality of what survives makes its poor state of preservation all the more tragic. If we are to believe most modern reconstructions, the monument was crammed to bursting with carved decoration, a superabundance that some recent scholars have clearly taken to mean that Maussollos, for all his Hellenizing taste, remained a barbarian at heart. He certainly remained an unapologetic Carian, as we can see from a colossal portrait statue, now in the British Museum, that may well represent the man himself or one of his ancestors ([Figure 30.3](#)). Handsome, dapper, and well-fed, sculpted with Greek refinement but dressed in Carian fashion, this figure sports a luxuriant shock of long hair, a detail that would have been regarded as hopelessly unkempt by Greek standards – but then most mature men in the Mediterranean would have loved to have such a mane at that age. The colossal Carian's consort is dressed in Greek fashion, and it is tempting, therefore, to associate the two with the cross-cultural pair of Maussollos, with his Carian name, and his sister-wife Artemisia, whose Greek name may well have been a tribute to the great goddess worshipped in neighboring Ephesos (although this deity was not entirely Greek herself); sadly, the queenly figure's face is missing. The most likely placement for these colossal figures is probably between the columns of the pteron, the monument's crowning colonnade of 36 Ionic columns (the Mausoleum was in Ionia, after all). Thirty-six columns (9×11 , or 8×12 ?) meant 36 spaces for 36 of these colossal statues, a quantum leap in size and quantity beyond the sculptural decoration of its probable source of inspiration, the Nereid Monument in Xanthos, with its three statues, four columns, and single pedimented façade. The large-scale statues presumably represented ancestors, heroes, or gods; we do not know enough about Carian beliefs to know with any precision where along the spectrum of divinity these sculptures actually stood.



Figure 30.3 Portrait of a Carian man (Mausollos?), Mausoleum of Halikarnassos, British Museum.

Source: Carole Raddato, <https://commons.wikimedia.org/wiki/>

File:Colossal_statue_of_a_man_traditionally_identified_with_Mausollos_king_of_Caria_ca.

A series of marble lions guarded the great tomb of Maussollos from malevolent spirits, either stalking across its roofline (as the lions pace in Babylon and Nimrud) or standing guard in heraldic pairs (as on the Lion Gate at Mycenae). The lions' poses and their exact positions are as uncertain as their symbolism is plain; from city gates to the façades of Greek temples, lions were a universal image of power and majesty. The large number of surviving fragments indicates that the Mausoleum's muscular, fierce, and beautifully modeled lions must have adorned all four sides of the monument. Most scholars place them on the building's pyramidal cap, but the German architect Fritz Krischen (1956) envisioned them in the colonnade.

Many reconstructions of the Mausoleum postulate a multistoried structure with one or more ledges to carry the two remaining sets of freestanding statues, crowded closely together. As archaeologist Walter Voigtländer has pointed out, however, none of the later structures that imitate the Mausoleum are so densely packed with sculpture; the statues are so close together in modern reconstructions that they lose their visual impact to crowding (Lindner and Hellström 1989: 43). To complicate matters further, fragments have been found of three continuous friezes life-size friezes, an Amazonomachy, a centauiromachy, and a chariot race. With these subjects, comparisons with the Parthenon must have been inevitable, and perhaps eagerly sought out, as Scopas and his cohorts worked to restore Ionia to the forefront of Greek art. The molding that crowns the Amazon frieze has been preserved, and was bound to it with a distinctive type of dovetail clamp. But how all these elements fit together on the architectural structure remains the subject of heated debate. To thin out the monument's statue population, some scholars have suggested that a certain number of these sculptural fragments might have come from the *temenos* and tomb chamber of the Mausoleum rather than its four façades.

With the current state of the evidence, reconstructing the Mausoleum is like assembling a gigantic jigsaw puzzle that happens to be missing half its pieces. Rearranging the various parts of the design, therefore, is an enjoyable, stimulating exercise, but for the moment it is an exercise without hope of a definitive solution. The choices eventually come down to individual ideas of what constituted Greek architecture in the fourth century, and whether this milestone of Greek architecture was garish, tasteful, or something in between. The Roman poet Martial described the monument as "hanging in empty air" (Mart. *Spect.* 1.1); for all its tremendous bulk, the structure may have been more light and transparent than most reconstructions suggest.

Current debates about the Mausoleum's original appearance begin with its general shape. Tombs like the earlier Nereid Monument and a slightly later monument at Belevi, Turkey suggest a broad, compact structure rather than the sleek lines of an early twentieth-century skyscraper (many of which were

inspired by the Mausoleum). The most recent reconstructions favor a gentle slope for the pyramid, but scholars in the seventeenth and eighteenth century tended to make the Mausoleum's roof mimic the steep slope of the Pyramid of Caius Cestius in Rome, the pyramid most of them knew best. With the exception of fountain houses, most Greek façades have an even number of columns and an odd number of intercolumniations, as well as sides of differing lengths; the Mausoleum presumably did as well. Once the colonnade has been set in place above the plinth, tall or squat, smooth or stepped as that may be, then a place must be found for the lions, the three friezes, and the three different ranges of statues, and with each place a significance in the larger scheme of the Mausoleum's decoration. Are the life-sized statues set near ground level as human ancestors, or are the colossi lowermost? What do the friezes mark as they wrap around the building? Do the lions parade along the cornice or stand alert on different levels of the pyramid? What were the plans for the precinct surrounding the monument? How much could anyone really see from the ground, or from a ship at sea?

The Mausoleum of Halikarnassos brought the man buried beneath it a deathless reputation but an ironic one: in the end, ancient writers remembered Maussollos more for his greed than for his magnificence. The seventeenth-century scholar Leone Allacci summed up centuries of ancient testimony in one pithy sentence: "He was a man of yawning avarice." The French lexicographer Pierre Bayle reached the same conclusion, cited here in the pungent eighteenth-century translation of Pierre des Maiseaux:

It appears that, in favor of the Persians, but chiefly out of a desire to enrich himself, [Maussollos] committed many piracies upon the neighboring isles. He was one who took money with both hands, and gave no quarter to the purse of his best friends, but made use of sly artifices to enrich himself at their expense. He engaged himself for money in all sorts of wicked actions.

(Bayle 1737: 174–175)

Ironically, then, the Mausoleum of Halikarnassos redounded far more to the honor of Artemisia than to that of her husband, both in antiquity and in Pierre Bayle's *Dictionary* (though Pliny reported that she, too, was "gloriae avidissima," as greedy for glory as her husband was for loot): "Neither his conquests, nor his good mien, nor his bravery, nor any of his actions procured for him such an immortal name as his wife did by the stately monument she built for him, and by the tender and friendly respect she preserved for his memory" (Bayle 1737: 174–175).

The Colossus of Rhodes

Like the Mausoleum of Halikarnassos, the Colossus of Rhodes was designed

to impress seafarers as well as local residents, and like the Mausoleum it drew tourists from the whole Mediterranean world. The gigantic bronze statue of Helios, the sun god, was a civic thank offering for his divine help in warding off an invasion in 305 BCE. The would-be-invader, Demetrios I of Macedon, was a formidable foe, known to his contemporaries as Demetrios Poliorketes, “the Besieger of Cities.” The capture of Rhodes was to crown a campaign that had already brought Athens, Egypt, and Cyprus under the Macedonian yoke, thanks to his well-trained fleet and his crack Macedonian pikemen. A master of siegecraft, Demetrius deployed the latest in military technology: huge bronze-beaked battleships with as many as 30 men to each oar, catapults to pulverize city walls, borers to penetrate mudbrick, bronze-tipped battering rams forged to the highest standard of purity. Most terrifying of all were the rolling siege towers, beaked with battering rams and bristling with catapults and archers, moving staircases that allowed his troops to scale the tallest city wall. The most ambitious of these may have been the famous “Helepolis,” “The Taker of Cities,” built with intimidating fanfare just outside the walls of Rhodes in 305 BCE – for psychology was yet another weapon in the Besieger’s formidable arsenal. But the story of the Helepolis had a surprise ending, one Vitruvius tells with relish, for the battle for Rhodes in 305 BCE hinged, ultimately, on the stratagems of two military architects like himself:

King Demetrios, who was called Poliorketes, “Besieger of Cities,” because of his obstinate temperament, prepared to make war on Rhodes, and brought Epimachos, a famous Athenian architect, along with him. Now Epimachos outfitted a siege tower at huge expense, with the greatest exertion and labor, 120 feet high and 60 feet wide. This he reinforced with goatskins and rawhide, so that it could withstand the impact of a 360-pound shot launched from a ballista. This machine itself weighed 360,000 pounds ... The Rhodians ... once they saw the enemy stubbornly challenging them, the war machine readied to capture their city, the devastation in store for the community ... threw themselves at the feet of Diognetos, the architect, begging him to help his homeland ... In the spot where the war machine was to approach the city, he pierced the city wall and ordered everyone, by public proclamation and personal appeal, to take whatever supply they had of water, sewage, and mud, and dump it through that aperture, where it passed through sluices out in front of the walls. Because a huge quantity of water, mud, and sewage had been dumped in that place during the night, when the siege tower began its approach the following day, it churned up a sinkhole in the slime and stopped dead before it ever neared the wall, unable either to advance or retreat. And so Demetrios, when he saw that he had been outwitted by the wisdom of Diognetos, withdrew with his fleet ... Thus, in defense, it is not so much machines that should be put at the ready, but strategies.

For Vitruvius, who had spent his youth building catapults for Julius Caesar, the moral of the story was clear: besieged cities, more often than not, owed their victories to “the cleverness of architects pitted against various types of machines” (Vitr. *De arch.* 10.16.12). The grateful Rhodians in 305 let their architect, Diognetos, have the Helepolis as war booty, which he duly dedicated on the acropolis of the city. But they also made certain to acknowledge the help of their patron deity with a tribute in finer, more durable materials than the Helepolis, which had been designed as a temporary structure, albeit a sturdy one. The lucky sculptor, Chares of Lindos, was a native of the island who had worked with the great Lysippos (*Plin. NH* 34.41). According to Pliny, it took Chares more than twelve years to complete the statue of Helios, with its stellar cost, 300 talents, financed by selling the “engines of war abandoned by Demetrios after his futile siege” (*Plin. NH* 34.42).

The war machines provided more than money; as marvels of technology, they also provided ideas about how to build a statue on an unprecedented scale. At 70 cubits, the Colossus would eventually rise to virtually the same height as the 120-foot Helepolis, and, in fact, the Helepolis may have served as scaffolding during construction of the Colossus (Rieger 2004:78).

Giant statues had long been a familiar sight in the Greek world. The towering seventh-century Apollo at Amyklai in Arcadia rose like a column in the center of its elaborate throne. Pheidias, before producing the 60-foot seated Zeus at Olympia, had already produced colossal standing statues in different media. His bronze Athena Promachos on the Athenian Acropolis must have stood 9 m high; the gold and ivory Athena Parthenos reached a towering 13 m. For both of these images, Athena’s skirts would have provided a wide, stable base. Chares of Lindos, however, showed both skill and daring when he opted for a nude Helios standing on two feet, gilded to shine almost as brightly as the sun himself (and surely to outshine the gleaming Proconnesian marble of the Mausoleum).

According to the writer Philo of Byzantium, Chares assembled the Colossus from mold-made parts, the same technique that Pheidias had used to create his chryselephantine statues of Zeus and Athena, and perhaps the Athena Promachos as well (Lapatin 2001). Philo described the framework of stone and iron rods that stabilized the structure from inside:

On the interior, the artist joined the Colossus together by means of iron tie-beams and squared stones; the connecting rods show traces of Cyclopean hammer blows. There is more workmanship hidden from view than there is to be seen on the exterior ... After setting down a base of pure white marble, he first mounted the feet of the Colossus up to the top of the ankle, calibrating the proportions with exquisite care so that they could support a god of seventy cubits, for the base itself already exceeded the height of

other statues. And because it was impossible to install the rest of the statue by hoisting it up in pieces, he finished the ankles of the feet *in situ*, and the whole project was constructed on top of them, just as in buildings.

(Ph. *Bel.* 4.2; translation IDR)

The idea that the Colossus straddled the harbor of Rhodes first appears in a late fourteenth-century traveler's account. In 1393, Nicola de Martoni, an Italian notary from Carinola, a little town in the hills north of Naples, made a pilgrimage to Egypt and the Holy Land together with two friends. Sailing from Gaeta on June 17, 1394, they landed in Rhodes on July 13. Local guides were soon assuring Nicola and his friends that in ancient times, ships in full sail had passed between the legs of "the idol" on their way into the harbor. The notary's vivid description of the long-lost statue would prove irresistible for Renaissance artists, though most of them probably knew that his harbor-straddling Colossus was pure fantasy. In the seismic zone of the Mediterranean, Chares of Lindos would never have entrusted so massive a statue to masonry jetties. His Helios rose above a stone base anchored in a foundation of bedrock within the city itself. Its sturdy legs must have been ranged side by side, like two closely placed columns, and firmly planted, as Philo's description specifies, on two feet. Those durable feet and the giant's ankles would maintain their position even after the rest of the Colossus fell in the earthquake of 226 BCE. The fallen giant was so immense, Pliny reported that "only a few can clasp their arms around his thumb." The bronze body weathered into a series of artificial caves, where visitors could pick out the remains of its metal armature and the stones that Chares had used as stabilizers.

An elegant engraving of 1554 by the French Franciscan André Thevet shows the collapsed statue amid a veritable horde of camels, its right heel raised off the ground in a stylish *contrapposto* (Figure 30.4). Evidently, then, most scholars in the Renaissance knew that the harbor-straddling Colossus was too good to be true, but artists, tour guides, and travelers have always hated to waste so beguiling a story. Today, visitors to Rhodes still scour the harbor for traces of the great straddling statue despite all the efforts of historians, art historians, and archaeologists to convince them that the search will be futile.



Figure 30.4 Antonio Tempesta, *The Colossus of Rhodes*. Etching from *Septem Orbis Amiranda*, 1608. Los Angeles County Museum of Art, Department of Prints and Drawings, Los Angeles County Fund (65.37.290).

Source: [http://commons.wikimedia.org/wiki/File:
%3AThe_Colossus_of_Rhodes_LACMA_65.37.290.jpg](http://commons.wikimedia.org/wiki/File:%3AThe_Colossus_of_Rhodes_LACMA_65.37.290.jpg). CC public domain.

Modern reconstructions of the Colossus normally show him nude or wearing a cape, in any case less thoroughly clothed than Thevet's toga-clad divinity, whose garment is as foreign to Greece as it is anachronistic. The purity of sunlight was normally thought to have no need of dressing up – with one exception. As an image of the sun, the Helios of Rhodes is always reconstructed with a crown of stylized rays radiating from his head. Some reconstructions keep the figure's arms close to his body; some stretch one arm upward or outward to hold a burning lantern. Thévet certainly understood one important point: whatever pose the Colossus took, it must have been as graceful as artistry could contrive on so immense a scale.

Frédéric Bartholdy's *Liberty Lighting the World* of 1886, the Statue of Liberty in New York Harbor, is directly inspired by the Colossus of Rhodes, and provides a cogent example of the freedom with which a confident artist can exploit the strength and flexibility of wood and metal, together with the sturdy support of stone, to create a work that is both sculpture and architecture. Both of these ambitious monuments to political freedom, the ancient Helios of Rhodes and the modern Liberty of the United States of America, are thus also tributes to the freedom of art and imagination. As an *agalma*, a dedication to

the gods, and as a civic attraction to rival the chief Sights to See along the coast of Asia Minor, the blazing golden Colossus of Rhodes succeeded brilliantly. “Indeed,” Philo of Byzantium tells us, “it presented with world with a second Sun” (Allacci 1640: 15).

But the shiniest of all the Seven Wonders was yet to come.

The Lighthouse of Alexandria

The Nile Delta is a broad, flat plain almost devoid of distinguishing features. In antiquity, however, a work of human hands provided the Delta with a landmark of international fame. Above the low-lying monotony of the Egyptian coastline, the Lighthouse of Alexandria beamed day and night, guiding ancient seafarers directly to the capital. A marvel of architecture and technology, this lighthouse, set on the island of Pharos, served as an inspired prelude to the city that was itself one of the marvels of the world. Vitruvius listed the advantages of Alexandria as “a naturally secure port, a thriving marketplace, the wheatfields of Egypt, and the immense usefulness of the great river Nile” (Vitr. *De arch.* 2.praef.4). But those natural resources were more than equaled by the human resources of Alexandria’s people: Greeks, Macedonians, Egyptians, Phoenicians, and Jews mingling with merchants from the whole world. The palace of the Ptolemies and its Mouseion, the shrine to the Muses, contained a library and study center for 100 scholars. Alexandrians were deeply learned, but they were also masters of technology, of machines both clever and useful, and the most remarkable of all those machines, in many ways, was the Pharos Lighthouse.

Today, Pharos is no longer an island, for the rocky outcrop has long since been joined to the mainland by a sandbar that turned into solid ground. A pink stone fortress stands on the site of the lighthouse, built by the fifteenth-century Arab general Qait Bey from pieces of the ancient structure, some of them still clearly visible today. Originally, however, the island of Pharos lay some distance offshore. Here, according to Homer, Proteus, the Old Man of the Sea, wrestled with the hero Menelaus, shifting his shape to escape the grip of the stubborn Greek. Menelaus held fast, and the Old Man rewarded him with a story. The hero’s description of the locale is vivid and precise:

There is, besides, a certain island, called
Pharos, that with the high-wav’d sea is wall’d,
Just against Ægypt, and so much remote,
As in a whole day, with a fore-gale smote,
A hollow ship can sail. And this isle bears
A port most portly, where sea-passengers
Put in still for fresh water, and away

To sea again ...

(*Od.* 4.354359; Trans. G. Chapman, 1616)

When Alexander set his new capital in this windswept tract of lake and sea, the island of Pharos was no longer a day's sail off the Egyptian coast (though it may not have been in Homer's day, either; the *Odyssey* is full of tall tales); instead, its sandbar virtually completed the curve of Alexandria's bay, still "a port most portly," with its twin harbors. Ancient sources report that the builder of the enormous lighthouse was named Sostratos of Knidos, who proudly proclaimed his benefaction to the city and the world in a large inscription on the side of the structure (Strabo 17.1.6). A diplomat in the new Greco-Egyptian court, Sostratos may have begun financing the project in the 290s under Ptolemy I, Alexander's immediate successor to the throne of Egypt. The work was completed, however, in 283/2 BCE, during the reign of his son Ptolemy II, nicknamed "Soter" ("The Savior").

At 100 m, the Pharos stood twice as high as the tallest lighthouses then extant in the Mediterranean. Our earliest evidence for these buildings in the Greek world dates from the sixth century BCE, and their chief use was to protect daytime traffic, for Greek mariners rarely sailed by night.

From what ancient records tell us, the design of Alexandria's lighthouse aimed for style as well as practicality. It rose in three tiers: a tall, sturdy square base pierced with windows that rose to some 60 m, an octagonal superstructure some 25 m high, and a round, colonnaded tholos (perhaps 15 m high) that housed the signal fire. Above the tholos, a pinnacle of gilded bronze portrayed a god and goddess in a chariot, a pair identified either as Zeus Soter and his consort, Hera, or Ptolemy II Soter and his queen, Berenice, or, as is most likely, both ([Figure 30.5](#)). Just as Alexander had "become" Zeus Ammon after his visit to the Siwa Oasis in the Egyptian desert, so the Ptolemies, while retaining their basically Greek culture and language, also "became" living gods on the Egyptian model, Olympian divinities in the form of human monarchs. The four foghorns installed on the towering lighthouse exemplified the combination of beauty and practicality for which Alexandrian machinery would quickly become famous: gilded bronze statues of tritons with curling scaly tails set at the four corners of the structure's lowermost tier, each merman poised to trumpet his warning to sailors from a long, spiraling gilded bronze shell.



Figure 30.5 Roman Mosaic of the Pharos Lighthouse, Alexandria. Qasr Libya Museum, Libya.

Source: © Gilles Mermet/Art Resource, NY.

Ancient mosaic images of the Pharos show a roaring fire at its summit; mirrors or glass may have enhanced the brightness of the blaze, but no evidence survives either to confirm or to refute the idea. Neither do we know what the Alexandrians burned for fuel in Egypt's desert environment: imported wood, reeds, dung, brush? Ancient authors claim that the beacon could be seen for 300 miles; in any case, it cast an impressive glow over the waters of the southeastern Mediterranean.

The Pharos also served Alexandrians as a splendid watchtower; incoming ships could, and did, use flashing lights to communicate information long before they pulled into the harbor. With the Roman conquest of Egypt in 31 BCE, the Pharos became the property of the emperors: Domitian, Trajan, Hadrian, Antoninus Pius, and Commodus all issued coins showing the lighthouse, often with special emphasis on its decorative sculpture.

A Wonderful Afterlife

In the third century BCE, just at the time when the first lists of Seven theamata were taking shape, the famous poet Callimachus of Cyrene (third century BCE) wrote a treatise on *Thaumasias*, “a collection of wonders in lands throughout the world” (Pollitt 1986: 147–148). This work, now lost, seemed to have concerned weird natural phenomena, rather than human inventions. In the heady days of the Ionian Renaissance, the wonders of human creation were things to be seen, to be sure, but they were also to be emulated and eventually surpassed. The citizens of Ptolemaic Alexandria and Imperial Rome would feel exactly the same way about past human achievements: they were a stimulus to still greater accomplishments. Most ancient writers therefore spoke of “things to see,” rather than marvels and wonders.

By contrast, early Christian and Arab writers often discuss these ancient monuments explicitly as wonders, technological marvels they have no hope, and no intention, of emulating, triumphs of a pagan world for which neither Christianity nor Islam nurtured much tolerance. In the early ninth century, the Byzantine chronicler Theophanes (d. 818) reported that a troop of Muslim invaders under Caliph Uthman (r. 644–656) had destroyed the Colossus of Rhodes and sold the scrap metal to a Syrian Jewish merchant, enough to load 900 camels (Conrad 1996: 166–187). The account was pure fiction, but the idea that the Colossus was a vulnerable pagan idol accurately reflected medieval attitudes for all three great monotheistic religions (Conrad 1996: 181–187). The fourth-century pseudo-Philo’s criticism of the Mausoleum as a monument to one man’s vanity shows the beginnings of that cultural change. The Knights of Rhodes show the final burst of iconoclastic Christianity before the advent of the Renaissance. The Pharos of Alexandria, on the other hand, was a useful structure, although an expensive one to maintain; hence the fifteenth-century general Qait Bey could decide that it was more practical to dismantle the historic monument and use its blocks to build a new fort. The Renaissance fascination with Classical antiquity, combined with early modern advances in technology led to a revived interest in the Seven Wonders that gained momentum in the later sixteenth century, with important reconstruction attempts by Maerten van Heemskerck (1572), Antonio Tempesta (1608), Marten de Vos (1614), and Athanasius Kircher (1679), before Fischer von Erlach (1721) ushered in the modern archaeological fascination with these amazing works (Kunze 2003; Merz 2005).

FURTHER READING

Clayton and Price (1989) and Romer and Romer (1995) are excellent books aimed at the general reader. Kunze (2003) is especially to be recommended for its lavish illustrations.

REFERENCES

Allacci, L., ed. 1640. *Philo Byzantius de septem orbis spectaculis Leonis Allatii opera Nunc primùm Graecè et Latinè prodit, cum Noti[s]*. Rome.

Bayle, P. 1737. *The Dictionary Historical and Critical of Mr. Peter Bayle*. Translated by P. des Maiseaux. London.

Carter, J.C. 1990. "Pytheos." In *Akten des XIII internationalen Kongresses für klassische Archäologie, Berlin 1988*, 129–136.

Ceccarelli, M., ed. 2004. *International Symposium on History of Machines and Mechanisms*. Boston.

Clayton, P. and M. Price, eds. 1989. *The Seven Wonders of the Ancient World*. London.

Conrad, L.I. 1996. "The Arabs and the Colossus." *Journal of Archaeological Science*, 6 (2): 165–187.

de Grummond, N.T and B.S. Ridgway, eds. 2000. *From Pergamon to Sperlonga: Sculpture and Context*. Berkeley.

Hammond, N. 2009. "Maltese Dockyard with a Wondrous Ancient Past." *Times Online*, 21 August.

Hornblower, S. 1982. *Mausolus*. Oxford.

Jenkins, I. 2006. *Greek Architecture and its Sculpture*. Cambridge, MA.

Jeppesen, K., ed., 1981–2002. *The Maussolleion at Halikarnassos. Reports of the Danish Archaeological Expedition to Bodrum*. 5 vols. Højbjerg.

Karlsson, L. and S. Carlsson, eds., 2011. *Labraunda and Karia*. Proceedings of the International Symposium Commemorating Sixty Years of Swedish Archaeological Work in Labraunda. Acta Universitatis Upsaliensis. Boreas 32. Uppsala.

Kircher, A. 1679. *Turris Babel*. Amsterdam.

Krischen, F. 1956. *Weltwunder der Baukunst in Babylonien und*

Jonien. Tübingen.

Kunze, M. 2003. *Die Sieben Weltwunder der Antike: Wege der Wiedergewinnung aus sechs Jahrhunderten*. Mainz.

Lancaster, L. 2002. "The Organization of Construction for the Superstructure of the Colosseum." *MDAI(R)*, 109: 341–375.

Lancaster, L. 2005. "The Process of Building the Colosseum: The Site, Materials, and Construction Techniques." *JRA*, 18: 57–82.

Lapatin, K.C.S. 2001. *Chryselephantine Statuary in the Ancient Mediterranean World*. Oxford.

Lindner, T. and P. Hellström, eds. 1989. *Architecture and Society in Hecatomnid Caria: Boreas 17*. Uppsala.

Merz, J.M. 2005. "Review of Max Kunze," *Die Sieben Weltwunder JSAH*, 64 (4): 570–572.

Pollitt, J.J. 1986. *Art in the Hellenistic Age*. Cambridge.

Rieger, N.F., 2004. "Engineering Aspects of the Collapse of the Colossus of Rhodes Statue." In Ceccarelli, ed., 69–85.

Robertson, M. 1981. *A Shorter History of Greek Art*. Cambridge.

Romer, J. and E. Romer. 1995. *The Seven Wonders of the World: A History of the Modern Imagination*. London.

Sturgeon, M.C. 2000. "From Pergamon to Hierapolis: From Theatrical 'Altar' to Religious Theater." In de Grummond and Ridgway, eds., 58–77.

CHAPTER 31

From Hellenistic to Roman Architecture

Rhys F. Townsend

When should we stop speaking of Hellenistic architecture and instead refer to a building as Roman? This question, seemingly so straightforward – it would appear to be a simple matter of dating – comes to involve the very nature and meaning both of Greek architecture in its latest phase and Roman architecture in its earliest. Dependable frameworks of art history break down, and issues of definition abound. Indeed, they have occupied art historians since the beginning of the discipline in the eighteenth century, when Johann Winckelmann published his seminal *Geschichte der Kunst des Alterthums* (1764), in which he viewed both Hellenistic and Roman art as simply part of the “decline” of Greek art. The nature of Hellenistic art continues to be debated more than two hundred fifty years later, with the elusive characteristics of the age variously defined, in terms of continuity from the Classical period, or as a series of innovations (Pollitt 1986; Robertson 1993; Stewart 2006). Virtually every manner by which scholars traditionally characterize periods in the history of architecture must be invoked: chronology and history, geography and culture, materials and techniques, building types and styles, patronage and purpose, theory and meaning.

Here I focus on the context for the architecture of the second century BCE up to the beginning of the Principate under Augustus (27 BCE). This period marks a tipping point that actually involves the convergence of three, not just two cultural systems, because the end of the Hellenistic period is also the end of the Roman Republican era. Examination by representative categories, the approach chosen here, inevitably involves overlaps between and among them and lacks the unifying hypothesis that a particular hermeneutic provides. But it offers the advantage of focus on the fundamental building blocks of interpretation that underlie more specific methods and theories. As for the questions of when, where, and how Hellenistic architecture leaves off and Roman architecture takes up, we shall see that answers may depend on the way the questions are framed.

Chronology

Within this framework the period of Hellenistic art and architecture begins with the death of Alexander the Great in 323 BCE and typically ends with

Octavian's victory over Cleopatra and Marc Antony at the Battle of Actium in 31 BCE. That naval victory in western Greece signaled the end of the Roman Republic and the virtual start of the Principate, and it is a decisive moment in the political history of Rome, of Greece, and of antiquity more generally. The Romans had actually been a presence in Greece for a considerably longer period, since the closing years of the third century BCE; and by the middle of the next century they had come to dominate the region, first militarily and then politically. The consul T. Quinctius Flamininus defeated Philip V of Macedonia in 197 BCE; in 168 BCE the consul L. Aemilius Paullus annihilated Philip's son Perseus at Pydna; 20 years later, Macedonia became a Roman province; and in 146 BCE, the Roman general Lucius Mummius dissolved the Achaean League, the dominant confederation of Greek city-states in the Peloponnese, destroyed Corinth, and placed southern Greece under the jurisdiction of the Roman governor of Macedonia. Roman presence manifested itself in less forceful ways as well. Immigration into Greece from Rome and Italy is known from the second century BCE on, along with a growing trend to grant Roman citizenship to Greeks (Millar 1987: xii; Ando 2000: 57–59). The Greek historian Polybius, who himself was taken hostage during this time, recognized the inevitability of Rome's triumph and chronicled it as it was happening.

Within Greece and the larger Hellenistic eastern Mediterranean, such turbulence was already a lived reality. The major Hellenistic kingdoms to emerge after the death of Alexander sputtered out beginning in the second century BCE. The last of the Macedonian kings, Perseus, fled to Samothrace after Pydna but soon was captured, processed in Aemilius Paullus' triumph in Rome, and died in captivity a few years later. Attalos III bequeathed his kingdom to Rome in 133 BCE; immediately it then formed the core of the Roman province of Asia Minor. The last claimant to the Seleucid throne, Antiochos XIII Dionysos Philopator Kallinikos (Asiaticus), died in 63 BCE; and the kingdom of the Ptolemies, the longest-lasting dynasty founded by Alexander's successors, ended with the death of Cleopatra VII Philopator in 30 BCE (Green 1990: 528–531, 658–659, 679; Gruen 1984: 594–603). In each case, Rome was the executioner.

As one empire exited and another entered to take its place over two centuries, it is natural to ask what the cultural effect was. The potential of architecture as a public art used for political purposes could be a good gauge of Roman presence and intention. Aemilius Paullus commemorated his victory at Pydna with an equestrian monument erected in the Sanctuary of Apollo at Delphi, but he and his fellow generals are better remembered as looters, not builders. Purely "Roman" architecture in Greek areas, honorific temples in particular, began in earnest only under Augustus (Hänlein-Schäfer 1985; Price 1984: 46; Millar 1987: x; Hoff 2013).

Meanwhile, Hellenistic building carried on steadily throughout the second

century BCE, as the Pergamene monarchs continued to build both at home and abroad (see [Chapter 28](#)). The architectural ambitions of the great Seleucid king Antiochos IV Epiphanes (circa 215–164 BCE) paralleled those of the Attalids. In his capital city, Antioch-on-the-Orontes, he created a new district, Epiphania, named after him. Antiochos associated himself with Zeus: Livy (41.20.9) tells us that he built a magnificent temple to Zeus at Antioch, while at Athens he commissioned the reconstruction of the colossal Temple of Zeus Olympios. The temples of Zeus at Olba (Uzuncaburç) and Lebadeia have also been attributed to him (Williams 1974: 413; Lawrence 1996: 159; Winter 2006: 10; see [Chapter 14](#)). Nor were these the only notable temples of the second century. The second phase of the imposing Temple of Artemis at Sardis belongs to this period (Gruben 1961). And at Magnesia-on-the-Maeander, the Temple of Artemis Leukophyrene by Hermogenes, one of the great temples of the Hellenistic age, designed by perhaps its most famous architect, probably was not completed until the middle of the second century ([Figure 31.1](#) and [Figure 31.2](#); Hoepfner and Schwandner 1990).

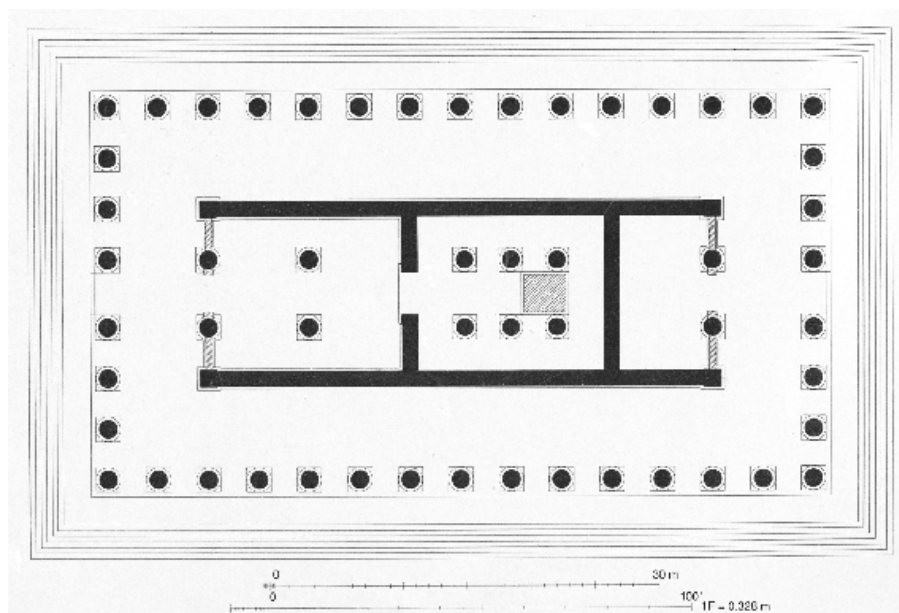


Figure 31.1 Temple of Artemis Leukophyrene, Magnesia-on-the-Maeander, plan.

Source: Humann, Kohte, and Watzinger 1904: Abb. 30.

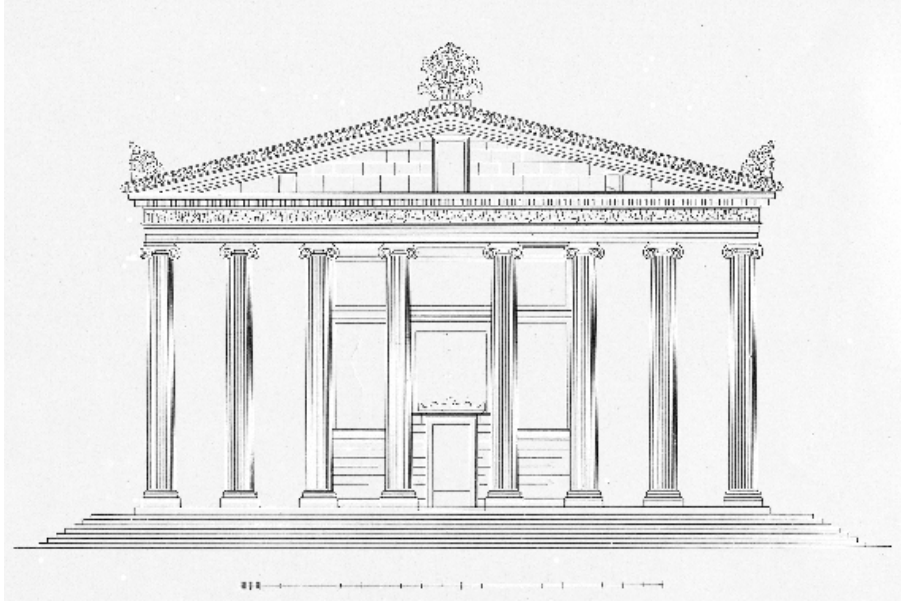


Figure 31.2 Temple of Artemis Leukophryene, Magnesia-on-the-Maeander, reconstructed drawing of front elevation.

Source: Humann, Kohte, and Watzinger 1904: Abb. 32.

Although the pace of Hellenistic building tapered off in the first century BCE, Romans did not immediately step in to fill the void despite their political control of both Greece and Asia Minor. In other words, if the architectural record were our only guide, one could scarcely believe the Romans were taking over the eastern Mediterranean in the last two centuries BCE. From a military and political perspective, the Hellenistic world was already Roman. From the point of view of architecture, it was still firmly Greek.

Geography and Culture

The dividing line between Hellenistic and Roman architecture is equally complex if one looks at the question from a geographical and cultural perspective. If defined by the regions conquered by Alexander the Great, the Hellenistic world does not include Italy; instead it extends from the area of modern Greece to the Indus River in the east. Culturally, however, the picture is different. Greeks, of course, had been present in the western Mediterranean for a very long time, and had established new cities in Sicily and southern Italy, and southern France, as early as the eighth century BCE. Many of the Greek cities in the west maintained a strongly held Greek identity well beyond the Hellenistic period (Bowersock 1965: 80–84). Tacitus, writing during the reign of Trajan, called Neapolis (modern Naples) a *Graeca urbs*, for instance

(Ann. 15.33); and Strabo in the Augustan period describes its many Greek cultural features: Greek games, gymnasia, ephebia, and phratries (Strabo 246). Even farther west, Strabo hailed the philhellenic qualities of Marseilles (181). Nevertheless, the Roman expansion into Greek lands ushered in a new chapter in cultural contact. The conquering generals, Aemilius Paullus, Flamininus, Mummius, and others, brought back vast numbers of Greek works of art and other items of plunder to celebrate their triumphs (Miles 2008). The effect of this material on Roman taste and sensibilities did not escape contemporary writers. Horace's famous quip provides a succinct, if ironic, assessment that "captive Greece conquered her wild victor and brought the arts to rustic Latium" (*Epist.* 2.1.156). Pliny's equally famed remark, "Asia, whence came luxury" (*HN* 34.34), points sharply to the impact that the influx of art and fashion had on conservative Roman taste. Rome, it seems, had won the military victory but lost the cultural war.

Architecture was as much a part of this new wave of Greek taste washing over the Italic homeland as any other aspect of culture (see [Chapter 32](#)). Suetonius quotes Augustus as saying he found Rome a city of brick but left it a city of marble (*Aug.* 28), yet we learn from various sources, literary and archaeological, that marble was in use well before the Principate. Velleius Paterculus (1.11.5), Pliny (*HN* 36.40), and Vitruvius (*De arch.* 3.2.5) all mention that a Greek architect from Salamis, a certain Hermodoros, constructed the first all-marble temple in Rome, dedicated to Jupiter Stator, in the late Republican period, and at least two others. The round temple by the Tiber, also dated to the second century, is made of Greek marble, and some have proposed that it too was built by Hermodoros (Wilson Jones 2000: 20). J.J. Pollitt suggests that Hermodoros, in fact, brought Hellenistic architecture to Rome (1986: 158). Pliny (*HN* 36.45) informs us that Sulla brought back columns from the Olympieion in Athens for use in the Capitoline Temple. The cargo of the ship, known as the Mahdia Wreck, provides corroborative evidence for the transport of columns from Greece. This vessel was headed for Italy before it foundered off the coast of Tunisia; dated to the first half of the first century BCE, it included unfinished columns of Greek marble (Fuchs 1963; Hellenkemper Salies 1994).

Vitruvius was well aware of Hellenistic architectural influence streaming into his native land and actively promoted it to his patron Augustus (Rowland and Howe 1999; Rowland 2013), so much so that his text seems conservative and overly dependent on Hellenistic sources, while overlooking the stunning new advances all around him. Although he knew about concrete and its various uses, he does not appreciate its potential. Vitruvius should not be criticized too harshly for lacking the "twenty-twenty" hindsight of history, however, and his text reflects the interests and ideas current at the time. Vitruvius was in fact greatly concerned with distinguishing between Greek and "Etrusco-Italic" elements in architecture, referring to the latter as *consuetudo italica*

(Boethius and Ward-Perkins 1970: 115–180; see [Chapter 32](#)). He distinguishes this homeland custom from Greek theory or “ratio.” The latter he discusses in his section on temple design, and for this subject he relies heavily on Hellenistic architectural theory, particularly that of Hermogenes. Temple architecture occupies two full books of *De Architectura* (III and IV), in which the Etrusco-Italic element makes virtually no contribution. In Books V and VI, however, Vitruvius turns to various forms of civic buildings, and here he is at pains to make distinctions between Etrusco-Italic buildings and their functions and their equivalent Greek types. He speaks, for instance, of the difference between the Greek agora and the Roman forum (*De arch.* 5.1.1), Greek vs. Roman theaters (*De arch.* 5.6.2, 5.7.1, 5.8.2), and the Greek palaistra/gymnasium in contrast to the Roman bath (*De arch.* 5.10–11) (see [Chapters 21, 22, and 25](#)).

Although he focuses on typological differences, Vitruvius’ subtext is cultural: he wishes to demonstrate an independence of Roman architectural design as a sign of distinct Roman social character (Wallace-Hadrill 2008: 144–210). A brief examination of Vitruvius’ treatment of bathing illustrates the point. After describing Roman baths (*De arch.* 5.10–11), Vitruvius turns to Greek palaistrai, describing what they are and how they are not an Italian tradition. The impression is of two different building types belonging to two distinct cultures. In actual fact, the gymnasium/palaistra and the Roman bath became increasingly intermixed in Italy beginning in the first century BCE (Yegül 1992). Not only were Greek public gymnasia and palaistrai constructed but wealthy Romans added them to their private villas as well, about which Vitruvius was surely aware. This apparent contradiction is resolved if we understand that Vitruvius, in the guise of architectural description, implicitly refers to social practice. Unwritten, but intended, is the negative view Romans held of Greek bathing culture, its associations with nudity, effeminacy, and moral corruption (Wallace-Hadrill 2008: 169–190).

Vitruvius, thus, is just as aware as his more literary colleagues that bringing the products of a foreign, offshore culture, specifically Greek, onto native Italic soil carried consequences. And he wished to show how architecture, the most public of arts, could be used to promote a proper image for the new empire, not only at home but abroad as well, “so that the state [Rome] was not only made greater through you [Augustus] by its new provinces, but the majesty of the empire also was expressed through the eminent dignity of its public buildings” (*De arch.* 1.praef.2). Recent research has recognized the diminishing distinctions between culture and geography, often problematizing it by asking about directions of influence: should we speak of a “Romanization” of Hellenistic architectural form? Or a “Hellenization” of Roman architecture?

Materials and Techniques

Modern scholarship has latched onto the technical aspect of building as perhaps the clearest way to distinguish between Hellenistic and Roman architecture. Every student learns that the Greeks were masters at post-and-lintel construction using dry ashlar masonry, that is, the precise carving and fitting together of rectilinear stone blocks without mortar, making use of clamps and dowels exclusively to hold the blocks together. The Romans, by contrast, perfected the art of construction with concrete, which they put to use in the creation of arches, vaults, and domes. In general terms, this basic rule holds up in the transition from Hellenistic to Roman architecture in Greece and Asia Minor. But it is not always as clear-cut as it might seem to label construction as “Greek” or “Roman.” The presence of concrete in a building is usually a good indication of Roman construction, at least in those parts where it appears. True Roman concrete is made with a lime-based mortar, a workable paste, that is strengthened by a binding or cementing agent, the best of which was *pozzolana*. The mortar is then mixed with an aggregate, which may consist of variously sized stones, broken tile, etc., to form concrete. But there are other types of mortar, both lime-based and earth- or clay-based, that are also combined with an aggregate of stones. Often referred to as mortared rubble, this material is not as strong as true Roman concrete but may be confused with it, particularly when it first appears in the puzzling setting of an archaeological site. Both Hellenistic and Roman builders used mortared rubble for various purposes. The Hellenistic engineer Philon of Byzantium (circa 280–220 BCE) recommends the use of metal (presumably clamps and dowels) or mortar both on exterior stones and in foundations. Arrian (*Anab.* 2.21.4) describes the fortification walls at Tyre besieged by Alexander the Great as having been constructed with large stones packed together with gypsum (whose properties as a mortar are similar to lime). Nevertheless, mortared rubble appears to have been used only infrequently in Hellenistic fortifications (McNicoll 1997: 11). In other architectural applications, Attalid builders used lime mortar fairly early. Elsewhere in Asia Minor, at Ephesos, mortared rubble occurs later, around the middle of the first century BCE, and in the Augustan period may be found together with ashlar in the same structure (Waelkens 1987). Indeed, the increase in building in both Greece and Asia Minor at this time may have been a catalyst for the first widespread use of mortared rubble in these regions. Further study of the origins and use of mortared rubble masonry in Asia Minor of the late Hellenistic and early Roman periods is needed. An important element in the discussion is the special technique that Vitruvius refers to as *emplekton* (woven), in which mortared rubble is used. Vitruvius distinguishes between Greek and Roman types of *emplekton*, but exactly what he means by the term is debated, and its use by modern scholars varies (Tomlinson 1961; Rowland and Howe 1999: 180–184). Determining when and where it appears may well aid in

establishing regional chronologies, especially of fortification walls.

While Hellenistic architects may have used mortared masonry, neither they nor any other ancient builders realized its potential in the way Romans did. Roman builders perfected the technique, creating true concrete, and devised various facings for it completely independent from ashlar masonry (e.g., *opus incertum*, *opus reticulatum*, etc.). Then they combined concrete with the arch and vault and thus transformed architecture forever (for more on Roman building techniques, see Lancaster and Ulrich 2013). The late Republican Sanctuary of Fortuna Primigenia at Praeneste (modern Palestrina) has long been recognized as an early example of this revolution in the making (see [Figure 32.1](#)). The complete and utter transformation of the hillside at this site into a monumental complex of overpowering scale and hierarchical order is virtually impossible to imagine in any other material.

Yet Roman-period builders did not reject ashlar masonry, which they admired as much as they did anything Greek; they learned to build very credibly in this technique, even taking it upon themselves to restore, or even move, architectural monuments of fifth-century Classical Greece, such as the transferred temples brought into the Athenian Agora beginning in the first century BCE (Camp 1986: 185–186; 2010: 110–112). The first of these transplants, the Temple of Ares (formerly the Temple of Athena at Pallene), belongs to the Augustan period, along with examples at Thessaloniki, Patrae, and Ilium (Jones 1999: 99; Spawforth 2012: 66). Ashlar construction was still actively practiced in Greece and Asia Minor during the first century BCE, but particular procedures and conventions of the craft had changed since the fifth century. The process of restoration, therefore – which could involve dismantling, labeling, transporting, and reconstructing buildings block by block – taught the masons the earlier traditions.

This “antiquarian” interest continued throughout the long period of the empire. Examples of masons imitating Greek building techniques may be found in cases both great and small. Roman masons rebuilding Philon’s Porch at Eleusis in the late second century CE not only imitated the final appearance of the original Classical masonry but also duplicated the intermediate stages of carving, which were still preserved among the original blocks of the porch. The Roman masons were so successful that it was not until recently that their work was distinguished from the original Greek (Townsend 1987). At around the same time, far off in a peripheral region of the empire, masons building a temple tomb in Lamos in western Rough Cilicia, employed a Greek type of lifting lewis rather than the Roman form – this in a structure that combined ashlar masonry with mortared rubble (Townsend and Hoff 2004: 258–259). The most extensive examples of Romans carrying on the practice of Greek masonry were the colossal temples of Greece and Asia Minor that continued under construction for long periods, sometimes for centuries, such as the Olympieion at Athens. In Asia Minor, the three great temples at Sardis,

Ephesos, and Didyma had similar histories. Of the three, only the Hellenistic Artemision at Ephesos appears to have been completed, although to do so took 120 years, according to Pliny (*HN* 36.21.95). The Temple of Artemis at Sardis, begun circa 300–250 BCE, was worked on in intervals until the Antonine period in the second century CE, at which time it was still incomplete. At Didyma, work on the Temple of Apollo had begun by circa 300 BCE, with contributions from the Hellenistic monarch Seleucus I; construction continued intermittently until the early second century CE. Even though the Romans worked on them well past the end of the Hellenistic era, and even though the Roman workmanship can sometimes be distinguished from Greek, from the standpoint of construction, the temples at Athens, Sardis, and Didyma should be viewed as Hellenistic monuments. As criteria to distinguish between Hellenistic and Roman architecture, materials and technique turn out to be as imprecise as any of our other measures.

Architectural Type and Style

Despite the remarkable legacy that Roman architecture left for succeeding centuries of Western civilization, it actually invented only one building type, the amphitheater. Granted, this structure has come to have remarkable influence, particularly in the form of modern sports stadia, but it factored very little when Rome first moved into the Hellenistic lands of Alexander the Great and his successors. There are only two amphitheaters of Republican date in all of Greece and Asia Minor – one at Corinth in the Peloponnese, the second at Antioch-on-the-Orontes in Syria (Welch 2007). The meeting ground of Hellenistic and Roman architecture thus lies almost exclusively in the building types first developed in Greek architecture: temples and sanctuaries, stoas and related forms, theaters, gymnasia, assembly halls, tombs, and houses. Here I restrict myself to the example of temples and their sanctuaries, since the temple form best demonstrates the complex aesthetic relationship between Greek and Roman architecture in this transitional period.

Hermogenes, whose career spans from the end of the third into the second century, is frequently viewed as representing the culmination of a hyperacademic tradition in architecture that began in the fourth century with Pytheos, architect of the Temple of Athena at Priene. Vitruvius tells us that both he (Pytheos) and Hermogenes condemned the faultiness of the Doric order that resulted from the irregularity of the triglyph and metope frieze, promoting in its place a modular grid system for which the Ionic order alone was appropriate (*De arch.* 4.3.1). Hermogenes is further famous for his elaborate system of column proportions, which again Vitruvius has handed down to us (*De arch.* 3.3.1–13). Finally, Vitruvius reports that Hermogenes “invented” the pseudodipteral temple (*De arch.* 3.3.8). The form actually first

occurs during the Archaic period, quite early in the history of Greek architecture, but these initial experiments were primarily intended as an easy (and economical) way to increase the width of a temple at a time when architects were struggling with the problem of scale in Doric temple design (Coulton 1977: 74–85, Winter 2006: 13–14). Hermogenes' pseudodipteral plan stemmed from a theoretical concept in Ionic peripteral temple design that closely integrated the colonnade and cella and as such may be the last attempt at significant design innovation in Greek temple architecture. One aim, as expressed in Hermogenes' great Temple of Artemis at Magnesia-on-the-Maeander (Figure 31.1 and Figure 31.2), appears to have been to reverse the typical relationship between mass and volume of the Classical temple, to emphasize space over form, or at least to balance them equally. The result is a play of spaces and proportion producing a lightness unusual for such a large-scaled structure. The substantial open area of the precinct in which the Artemis temple was placed would have enhanced this airy quality, but the effect does not depend on it. The building stands as an autonomous structure, very much in concert with the long tradition of Greek temple architecture.

Vitruvius points out there are no examples of a pseudodipteral temple in Rome, but his patron Augustus was honored with one in Ancyra (modern Ankara) (Figure 31.3 and 31.4). Dedicated to Rome and Augustus, the temple was chosen for the display of Augustus' *Res Gestae*, copies of which were disseminated throughout the empire. The text was inscribed on the temple walls in both Greek and Latin; today it is the best-preserved copy of this famous document (Krencker and Schede 1936; Brunt and Moore 1967). The design of the Temple of Rome and Augustus clearly acknowledges Hermogenes' Artemision at Magnesia. Each is raised on a large, multisteped crepis. Both have 8×15 colonnades, well recessed from the edge of the stylobate. Both have wider intercolumniations in the center spacing on the fronts; the Temple of Rome and Augustus extends the wider spacing to the intercolumniations on each side of the central spacing. The temple at Ancyra is smaller, just under three quarters the area of the Artemis Temple, and somewhat wider in proportion to its length. The plan of its cella is different as well, but it closely copies the unusual combination of the prostyle and in antis design of the Temple of Zeus Sosipolis at Magnesia, which has been attributed to Hermogenes (Krencker and Schede 1936: 43–44; Hänlein-Schäfer 1985: 52; Hoepfner 1990: 20–23; contra, Uz 1990: 61, n. 47). Augustus' temple at Ancyra uses the Attic-Ionic column base, which Hermogenes employed on the Temple of Artemis, and, as passed down through Vitruvius and later Roman architecture, became the standard form of base for the Ionic and Corinthian orders from the Renaissance to modern times. The temple is thus entirely Hellenistic in appearance, and there is perhaps no better testament to this quality than that it was first dated on stylistic grounds to the second century BCE (Krencker and Schede 1936: 44).

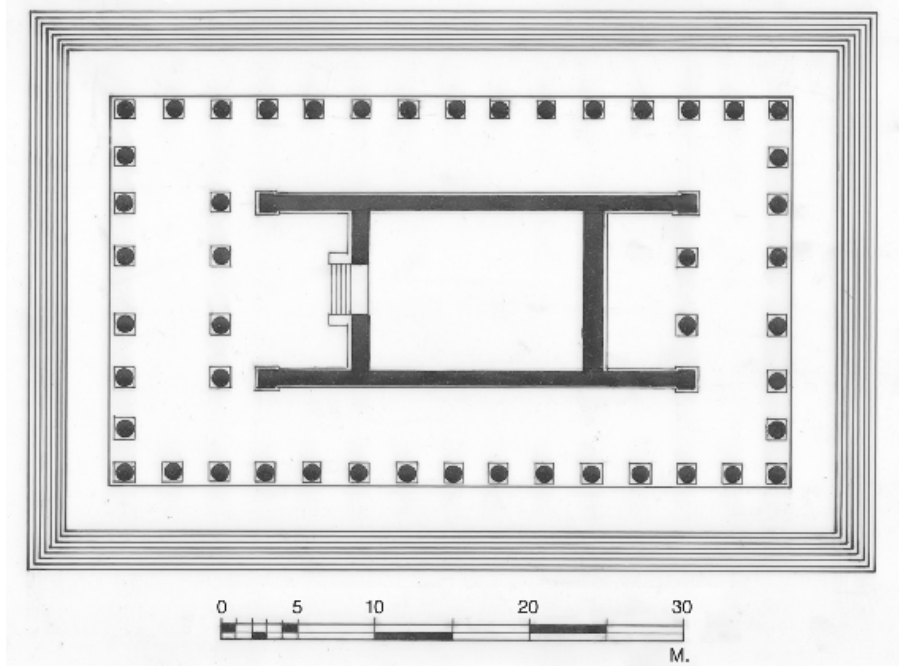


Figure 31.3 Temple of Rome and Augustus, Ancyra, plan.

Source: Adapted from Krencker and Schede 1936: Abb. 10.

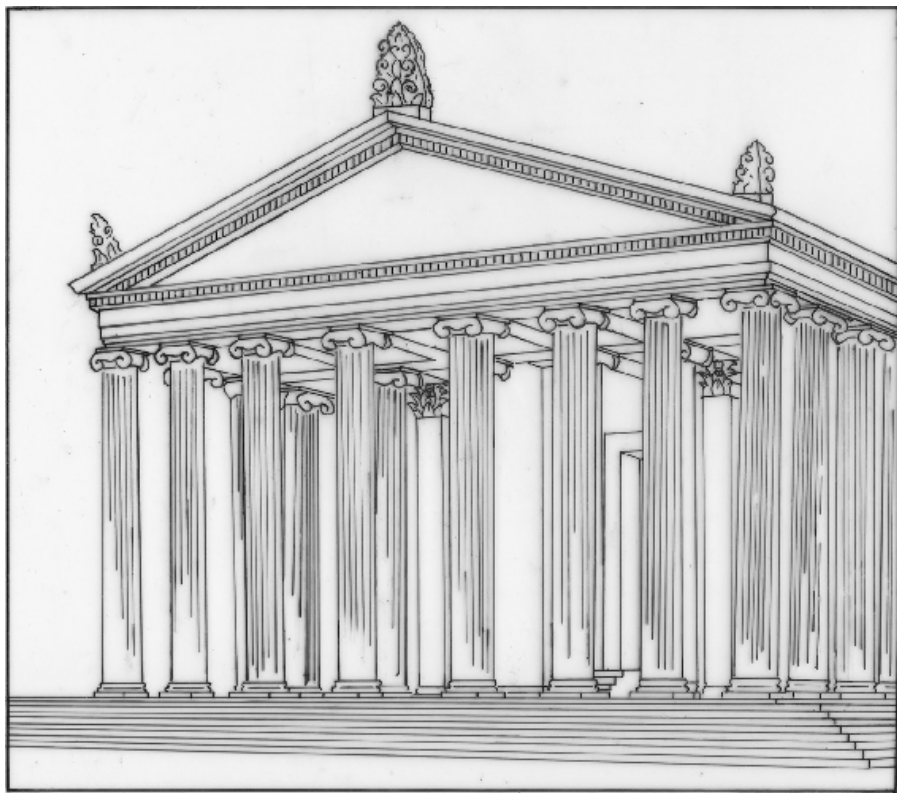


Figure 31.4 Temple of Rome and Augustus, Ancyra, restored view of exterior.

Source: Adapted from Krencker and Schede 1936: Taf. 1.

The Temple of Rome and Augustus joins an impressive list of pseudodipteral temples of the Hellenistic period in addition to the Artemision at Magnesia: the Temple of Aphrodite at Messa on the island of Lesbos (end of fourth–early third century BCE); the Temple of Apollo Smintheos at Chryse (mid-third century BCE); the Temple of Hekate at Lagina (second half of second century BCE); the Temple of Apollo at Alabanda (late second century BCE); the second-century BCE phase of the Temple of Artemis at Sardis; and the Temple of Aphrodite at Aphrodisias, which was remodeled as a pseudodipteral temple, perhaps as early as the Augustan period, thus making it contemporary with the Temple of Rome and Augustus (for the date see Reynolds 1987: 83; Theodorescu 1990: 65; Reynolds 1990: 38; Hellmann 2006: 105–106; Ratté 2008: 12). The temple in Ancyra also anticipates an early imperial pseudodipteral temple at Sardis (Ratté, Howe, and Foss 1986) and a later Roman example, the Temple of Zeus at Aizanoi, built in the reign of Hadrian or slightly later. In terms of general style, there is very little to distinguish the Hellenistic “originals” in this list from their so-called Roman imitations.

Another temple dedicated to Augustus at the Roman colony of Pisidian Antioch took a very different form (Mitchell and Waelkens 1998; Gazda and Ng 2011). An example of the podium temple type, it is tetrastyle prostyle in plan with two rows of Corinthian columns in the porch, perched atop a platform accessed by a monumental flight of steps (Figure 31.5 and Figure 31.6). The temple was inextricably linked to the imperial sanctuary surrounding it. The ensemble begins at the west with a monumental stairway of 12 steps rising to a propylon that displayed another copy of Augustus' *Res Gestae*. Designed in the form of a triumphal arch, and at the time of its construction just the second three-bayed arch built in Asia Minor (Rubin 2011: 41–42), it is a particularly fitting context for this document written as if it were an account of a triumphal general of the late Republic. Beyond the propylon extends a horseshoe-shaped columned piazza, an area of more than 6000 m² carved out of bedrock at the foot of the acropolis. The temple is situated at the rear of the piazza, framed by a two-storied hemicycle and on axis with the propylon opposite. The focal point of the complex, it is the crowning jewel of an imperial architectural diadem. As such a jewel, however, it does not exist on its own, independent from the complex; it would be diminished if taken out of context.

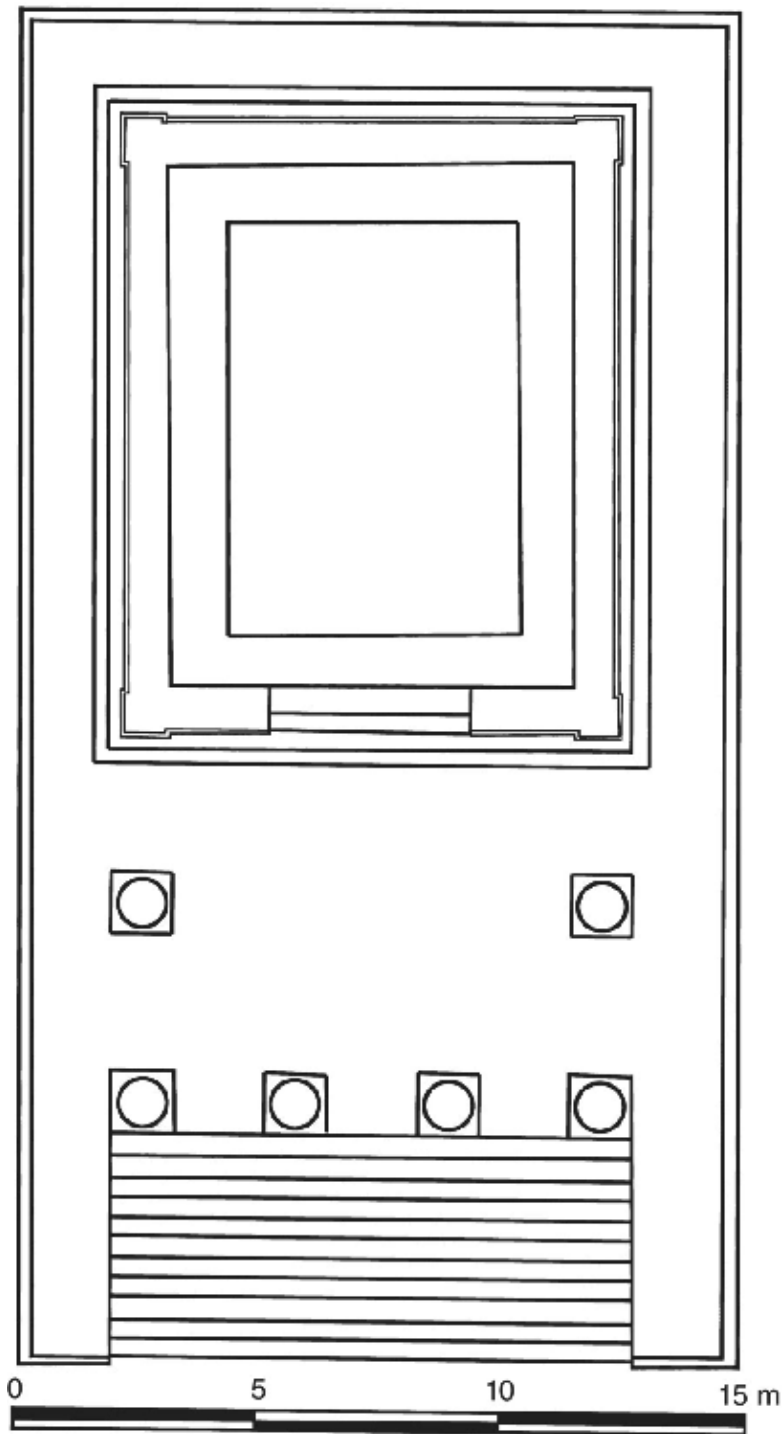


Figure 31.5 Imperial Temple, Pisidian Antioch, plan.

Source: D. Weiss, adapted from Mitchell and Waelkens 1998: Fig. 23.



Figure 31.6 Imperial Temple, Pisidian Antioch, view from east, looking west.

Source: R.F. Townsend.

The axuality, frontality, and design integration seen in the temple and sanctuary at Pisidian Antioch belong to the Etrusco-Italic tradition and Vitruvius' *consuetudo italica*, and not that of the freestanding Hellenistic temple. Despite his apparent eagerness to distinguish between Greek and Roman qualities in other building types, nowhere in *De Architectura* does Vitruvius differentiate between Greek and Roman temple design in this fashion. At least one modern scholar has suggested that this distinction, a commonplace in handbooks on Greek and Roman architecture, reflects a modern construct (Coarelli 1996: 18–20). There appears to be some validity to this view, since elements of frontality in fact are found in Hellenistic temples of Greece and Asia Minor; there are even a few instances of plans approaching a podium-like design. The prostyle form, with columns projecting in front of the antae of the cella, clearly emphasized a temple's entrance to an extent that the peristyle form never did. Experiments in prostyle design are found quite early in the great fifth-century temples on the Acropolis at Athens: the Parthenon, the Temple of Athena Nike, and the Erechtheion. Strictly prostyle temples, in which columns are placed *only* in front of the entrance to the cella and nowhere else on the exterior, occur in the fourth century, and they become increasingly popular and are common in the Hellenistic period. Examples at Pergamon alone, dating from the late third through second centuries, include the following (Radt 1999; see Figure 28.4): the Temple of Zeus in the Upper Agora, constructed circa 225 BCE; the Temple of Dionysos on the theater terrace, most likely part of the great building program of Eumenes II (197–160/159 BCE); the Temple of Hera in

the Upper Gymnasium Complex, built during the reign of Attalos II (159–138 BCE); Temple “R,” also in the Upper Gymnasium Complex and dating either to the beginning or middle of the second century BCE; and the rebuilding of the small temple (perhaps dedicated to Hermes and Herakles) at the east end of the Middle Gymnasium complex in the late Hellenistic period.

Other stylistic elements associated with Roman podium temples also have earlier precedents in both temple design and other building forms. Engaged columns, for instance, which reduce the peristasis to a decorative feature the cella wall, occurred in the interior of temples from the late fifth century BCE onward; starting in the Hellenistic period they appear on the exterior, as in the early example of the anonymous Temple “L” at Epidauros of the early third century BCE (Roux 1961). Axiality is found in subterranean tombs of the Hellenistic period in Alexandria, Egypt (Venit 2002), while above-ground tombs in Lycia are commonly elevated on podia.

Beginning in the early Hellenistic period, elements of frontality and axiality make their way into the design of sanctuaries as well. The Sanctuary of Zeus Soter at Megalopolis, dating to the late fourth century BCE, is organized axially, the earliest sanctuary in Greece where the temple is the focal point of an enclosed peristyle court (Lauter-Bufe 2009). Yet the east–west line of propylon, altar, and prostyle temple, is offset by a second propylon that enters the court from the north. Not far from Megalopolis, the Asklepieion at Messene was designed around a peristyle court around the beginning of the third century (Themelis 2003; 2010). The major axis of propylon, altar, and temple is again mitigated by a second gateway at the north and the plan of the peristyle temple, 6 × 12 columns, is standard for its period. These early instances established a design concept that continued through the Hellenistic period.

Flexibility and adaptive response mark the design of Hellenistic sanctuaries, in the interconnection among buildings and the relationship between architecture and the landscape. Of the second-century prostyle temples at Pergamon, the Temple of Dionysos in the theater precinct below the acropolis probably makes use of frontality, elevated height, axiality, and natural setting most dramatically (see [Figure 28.4](#)). Yet the design appears to have been dictated as much by topography as by stylistic choice. There was very little space on the steep slope in which to place the requisite elements of the complex: temple, skene (stage building), stoa, and cavea (seating area). The solution lay in the construction of a narrow terrace over 200 meters long, which provided access to the theater and formed a level footing for the skene, in front of which rose the cavea carved into the hill. The Temple of Dionysos sat at the far end of the terrace, but placement of the skene in front of it impeded an axial approach. The ground level rises steeply on the uphill side of the temple, thereby reducing the effect to which the podium elevated and separated the temple from its surroundings. Finally, while there was a set of

stairs only at the front, the temple itself sat on a traditional three-stepped crepis distinct from the staircase, conceived independently.

Two other sanctuaries in particular are cited in surveys of Hellenistic architecture as examples of dramatic settings: the Sanctuary of Athena at Lindos on the island of Rhodes (see [Figure 29.1](#)) and the Sanctuary of Asklepios on the island of Kos (see [Figure 29.3](#)). Both sanctuaries are viewed as forerunners of the crescendoing effect that is the hallmark of such great Roman sanctuaries as that of Fortuna Primigenia at Palestrina in Italy (see [Figure 32.1](#)). While the similarities are undeniable, the differences are equally significant. In both Greek sanctuaries, the design evolved over time rather than at a single stroke of planning and construction. Thus, strict unity was never achieved but was readily sacrificed in order to take existing buildings into account and to accommodate the landscape. The architecture highlighted the natural setting but did not overpower it.

The transformation of landscape through strict axial control and hierarchical organization as occurs in Roman complexes is rightly recognized as a distinct Roman characteristic, intensified, as we noted earlier, by Roman mastery of concrete and arcuated construction. The question still remains, however, whether the Romans were merely catalysts in a stylistic development already taking shape in Hellenistic planning. This is a difficult question to answer because we lack so much of the monumental Hellenistic architecture of Alexandria in Egypt and Antioch-on-the-Orontes in Syria, although valiant efforts have been made to reconstruct their former glory (on Alexandria, see Grimm 1998; McKenzie 2007; on Antioch, Downey 1963, the essays in Kondoleon 2000). These two great cities were more famous than either Pergamon or Miletos, whose architecture scholars rely on extensively for our present understanding of Hellenistic architecture. There is some evidence that both Ptolemaic and Seleucid architecture may have demonstrated strict “Roman” axial design, as, for instance, in Seleucid predecessors to the architecture at Baalbek, Syria, or in the Sarapeion at Alexandria and in the temple and temenos at Hermopolis Magna in Upper Egypt, both precincts built under Ptolemy III Euergetes (284–221 BCE) (Winter 2006: 17, 21–26; for “classical” architecture in Alexandria, McKenzie 2007: 80–118; see also [Chapter 29](#)). What may be more important than the question of origin, however, is that of agency, the selection of the “Roman” style to achieve a specific purpose.

Patronage and Purpose

The comparison of the Temple of Rome and Augustus at Ancyra and the imperial sanctuary at Pisidian Antioch provides a valuable case study by which to examine the relationship between architectural style and patronage.

Each complex was the visual expression of the newly formed imperial cult under Augustus in its particular locale. Little is known about Ancyra prior to the time of Augustus, other than that it was one of the few towns in Galatia, a region inhabited by rural tribal people of Anatolian origin with little urban history (Jones 1971: 117–122). Alexander passed through Ancyra after leaving Gordium, where he famously cut the Gordian knot. Livy (38.24.1) describes it as an “*urbs nobilis*,” but Strabo (12.5.2) calls it simply a “fortress” (φρούριον). In 25 BCE, Augustus made Ancyra the capital of the newly created province of Galatia, where the local tribes readily pledged loyalty to the emperor. Greek civic institutions of the *boule* (council) and *demos* (assembly) were set up, and by the second century CE Hellenization, at least of the upper classes, appears to have been complete. In the same year, Augustus refounded Pisidian Antioch as a Roman colony, *Colonia Caesarea Antiochia*, and placed it under Ancyra in Galatia. Antioch had enjoyed a relatively long history as a semi-independent Greek polis and belonged to a region that was less cooperative in coming over to Rome. As many as 3000 Roman veterans were settled and immediately became the ruling elite; they dissolved the existing Greek institutions and relegated the former citizens to the status of resident foreigners (Rubin 2011: 33).

The choice of a “Roman” design for the imperial cult at Antioch, as opposed to the “Hellenistic” type at Ancyra, undoubtedly reflected their contrasting backgrounds and was made with the idea of shaping each of these two cities of Galatia along different lines. The comparison provides as clear evidence as we can hope for that Augustus was not only aware of the two architectural styles but also used their distinct visual forms purposefully to help shape political meaning. In Athens, Augustus juxtaposed Greek and Roman archetypes right next to each other in order to convey the complex relationship between Athens, the standard-bearer of the old order, and Rome, the sovereign of the new. The Market of Caesar and Augustus took over the function of the Agora, while the original Greek city center, located only a short distance away, assumed a new and more monumental character, with the transferred temples and the Odeion of Agrippa (see [Chapter 24](#)). The implications of such a juxtaposition likely extended further, to deeper levels of symbolic meaning (Spawforth 2012: 59–86).

Use of architecture for political propaganda was not new to Augustus of course. Hellenistic monarchs had long projected power and ideology through building programs. We have already observed how Antiochos IV associated himself with Zeus through his patronage of temples dedicated to the supreme god, and how Pergamene kings fortified their authority through constructions both at home and abroad (see [Chapter 28](#)). Pergamon cultivated a relationship with Athens as subtle and complex as Rome was to craft under Augustus, promoting itself as the new Athens while simultaneously vowing to honor and protect the old one (e.g., Stewart 2004: 226–228, 287). In Egypt, the

Ptolemies erected temples in the ancient, traditional style of the pharaohs. These include the Temple of Horus at Edfu, built in intervals from the third to first centuries BCE; that of Horus and Sebek at Kom Ombo, constructed by Ptolemy VI Philometor (r. 180–164, 163–145 BCE); and the Temple of Hathor at Dendera from the very end of the Ptolemaic dynasty, Cleopatra VII having brought the complex close to completion by the time of her death in 30 BCE. Strictly speaking, these are not Hellenistic at all, since whatever else it may imply, the term Hellenistic denotes a style that is Greek in origin (Pollitt 1986: 259). But this underscores the extent to which Ptolemaic rulers could manipulate architectural form in order to solidify their claim as legitimate rulers of Egypt.

What separates Roman from Hellenistic patronage in architecture is the later period's centralization and emphasis on the emperor and the imperial cult. Unlike the separate centers of Hellenistic art that match the division of Alexander's realm – Antigonid, Seleucid, and Ptolemaic – patronage in Roman architecture focuses solely on the emperor. Only about a dozen shrines dedicated to Hellenistic kings are known over the course of two centuries from the death of Alexander to the end of the second century, very few compared to the evidence for the cult of the Roman emperor (Price 1984: 162). Even when not dedicated to the emperor, buildings such as the Agrippaeum or the Temple of Ares in the Athenian Agora reference his power. This focus is not surprising. Less expected is the conscious selection of different styles for the expression of imperial authority.

Theory and Meaning

This observation brings us back to the original questions of this chapter, that of principles and criteria by which to distinguish Hellenistic and Roman architecture. We have seen that several standard benchmarks for separating one artistic period from another have proven equivocal. Looking at the transition from Hellenistic to Roman architecture as part of the broader historical context of the second and first centuries BCE reveals the paradox of Hellenistic kingdoms continuing to undertake major building programs when Rome had already established military and political control in the region. Geographic and cultural distinctions proved to be equally imprecise. Italy enjoyed a wealth of Hellenistic architectural building types and styles, and Romans were exposed to the cultural influences that came along with them. The empirical gauge of materials and techniques does not provide a clear mechanism by which to distinguish Hellenistic building practice from Roman. Romans became adept at Hellenistic techniques of Greek ashlar construction, and they continued to use them to erect buildings of Hellenistic type and style well into the empire. Are such buildings not Hellenistic, even if Romans

constructed them in the second century?

The answer appears to be yes, to judge from the viewpoint of the Romans themselves. Despite the inconsistencies and difficulties of interpretation the text of Vitruvius presents, we have seen that he does distinguish between Greek and Roman approaches to the building arts in *De Architectura*. And we witness this distinction put into effect in the Temple of Rome and Augustus at Ancyra and the imperial sanctuary at Pisidian Antioch. Built at the same time, in same province, by the same emperor, they nevertheless display different styles, one Greek, the other Roman. As products of imperial patronage, both are Roman. And the message they communicate, that of imperial authority, is also Roman. But each conveys meaning in a different language. Moreover, that language is not merely a transmitter of the message, it is part of the message itself. Therefore, we return to where we began: a structure can have different or multiple identities, and the answer to the question of where Hellenistic architecture leaves off and Roman begins really does depend on how the question is framed.

Various explanations and terms have been applied in an effort to clarify, or at least describe this relationship. In recognition that clear distinctions between Greek and Roman do not apply to the period under discussion in this chapter, the label Greco-Roman is often used. It is a convenient tag, but, as a purely descriptive term, does little to explain the forces at work. More analytic but also more problematic are the phrases “Hellenization” and “Romanization.” These refer, respectively, to the influence of Greek art and culture (whether specifically Hellenistic or that of an earlier period) on Roman, and to Roman influence on Hellenistic art and culture. As applications of acculturation, the process whereby one culture assimilates another, Hellenization and Romanization ascribe causal agency to one of the two cultures; either Greek culture influences Roman culture, or vice versa. Determining the direction of influence, as we have seen, is not easy. Hellenization and Romanization present additional difficulties in that they imply a dominant (colonizing) and submissive (colonized) culture. It may seem that elements of Greek architecture outweighed Roman in the building arts of the last two centuries BCE in the eastern Mediterranean, and that it was not until the High Empire of the second century CE that Roman principles predominated. While this could argue the case for Hellenization as ascendant over Romanization until that time, it does not explain why a conquering state would allow itself to be so influenced by the defeated culture – unless it wanted to. As we have seen, there are clear instances of so-called Hellenization that were really at the service of Romanization. (See Revell 2013 for a discussion of Romanization in architecture, along with a discussion of the problems associated with the notion of “Romanization.”)

Other theoretical models need be sought that go beyond the “either– or” dichotomy of simple acculturation. The concept of hybridity introduces an

additional element to the equation, the possibility of a new, composite whole, created out of the interbreeding between colonizer and colonized. Hybridity has been explored for its suitability to the study of ancient Greek material culture (Antonaccio 2003), but it does not easily fit architectural development at the end of the Hellenistic period. There are few examples of buildings that could be described as a true fusion or merging of Greek and Roman characteristics, which a hybrid form suggests. And it would exclude several examples studied in this chapter, such as the Greek temples built by Romans. A. Wallace-Hadrill, who has closely examined the concept of hybridity and other approaches to this issue (2008: 3–37 and *passim*), proposes a model of mutual influence that maintains the integrity of both Greek and Roman culture throughout the period of contact of the late Roman Republic and late Hellenistic age. He stresses the idea of active dialogue between the two that eliminates the notions of victor and vanquished, and equally has no need of new, hybridized forms. He applies the metaphor of a beating heart in which Hellenization represents blood drawn into the center (the heart, Rome itself) and Romanization that same blood, refreshed, circulating back throughout the body (Wallace-Hadrill 2008: 27, 361; Spawforth 2012: 2). The advantage of Wallace-Hadrill’s “tell-tale heart” is that it provides for the continued existence of both cultures simultaneously, the two interdependent but distinct. It also emphasizes the notion of cultural interaction as a process within an overall system rather than looking at it solely in terms of a resultant product (Sewell 1999, cited in Antonaccio 2003: 57–58). The materials, techniques, forms, styles, and functions of both Greek and Roman architectural traditions constitute visual symbols, each redolent with meaning in a structured relationship.

Polybius also envisioned the meeting of Greece and Rome by means of a metaphor appropriate to the concepts of process and system. Although he certainly thought of Rome as the conqueror in its engagement with Greece, Polybius nevertheless speaks very deliberately, in setting out the purpose of his work, of the *συνπλοκή*, the *interweaving*, of the histories of Greece and Rome (Polyb. 1.3.4; Henderson 2001: 30). It is a fitting image – the entwining of these two cultures, warp and weft, in which both the threads themselves and the process of combining them continue to be visible in the resulting interlocking system of woven form.

FURTHER READING

For Hellenistic art and architecture, Pollitt 1986 is fundamental; see also the essays in Green 1993, de Grummond and Ridgway 2000, Goldhill 2001, Bugh 2006, Stewart 2004, and McKenzie 2007. On the transitional relationship between Greece and Rome, see Brendel 1979, Gruen 1984, Green 1990,

Spawforth 2012; on Roman reception of Greek culture, see Bowersock 1965, Price 1984, Coarelli 1996, Ando 2000, Wallace-Hadrill 2008, and Miles 2008, and the essays in Evans 2013 and Ulrich and Quenemoen 2013. Hellmann 2006 provides excellent illustrations.

REFERENCES

Ando, C. 2000. *Imperial Ideology and Provincial Loyalty in the Roman Empire*. Berkeley.

Antonaccio, C. 2003. "Hybridity and the Cultures within Greek Culture." In Dougherty and Kurke, eds., 57–74.

Boethius, A., and J.B. Ward-Perkins. 1970. *Etruscan and Roman Architecture*. Baltimore.

Bonnell, V.E. and L. Hunt, eds. 1999. *Beyond the Cultural Turn: New Directions in the Study of Society and Culture*. Berkeley.

Bowersock, G.W. 1965. *Augustus and the Greek World*. Oxford.

Brendel, O.J. 1979. *Prolegomena to the Study of Roman Art*. New Haven.

Brunt, P.A. and J.M. Moore, eds. 1967. *Res Gestae Divi Augusti: The Achievements of the Divine Augustus*. Oxford.

Bugh, G, ed. 2006. *The Cambridge Companion to the Hellenistic World*. Cambridge.

Camp, J. 1986. *The Athenian Agora: Excavations in the Heart of Athens*. London.

Camp, J. 2010. *The Athenian Agora: Site Guide*. Princeton.

Coarelli, F. 1996. *Revixit Ars: Arte e Ideologia a Roma*. Dai Modelli Ellenistici alla Tradizione Repubblicana. Rome.

Coulton, J.J. 1977. *Ancient Greek Architects at Work: Problems of Structure and Design*. Ithaca.

de Grummond, N.T. and B.S. Ridgway, eds. 2000. *From Pergamon to Sperlonga: Sculpture and Context*. Berkeley.

De La Genière, J., and K. Erim, eds. 1987. *Aphrodisias de Carie*. Colloque du Centre de recherches archéologiques de l'Université de Lille III. Paris.

Dougherty, C. and L. Kurke, eds. 2003. *The Cultures within Ancient*

Greek Culture: Contact, Conflict, Collaboration. Cambridge.

Downey, G. 1963. *Ancient Antioch.* Princeton.

Evans, J.D., ed. 2013. *A Companion to the Archaeology of the Roman Republic.* Malden, MA.

Fuchs, W. 1963. *Der Schiffsfund von Mahdia.* Tübingen.

Gazda, E.K. and D.Y. Ng, eds. 2011. *Building a New Rome: The Imperial Colony of Pisidian Antioch (25 BC–AD 700).* Kelsey Museum Publications 5. Ann Arbor.

Goldhill, S., ed. 2001. *Being Greek under Rome: Cultural Identity, the Second Sophistic, and the Development of Empire.* Cambridge.

Green, P. 1990. *Alexander to Actium: the Historical Evolution of the Hellenistic Age.* Berkeley.

Green, P., ed. 1993. *Hellenistic History and Culture.* Berkeley.

Grimm, G. 1998. *Alexandria: die erste Königstadt der hellenistischen Welt: Bilder aus der Nilmetropole von Alexander dem Grossen bis Kleopatra VII.* Mainz am Rhein.

Gruben, G. 1961. "Beobachtungen zum Artemistempel von Sardis." *AM*, 76: 155–196.

Gruen, E.S. 1984. *The Hellenistic World and the Coming of Rome.* Berkeley.

Hänlein-Schäfer, H. 1985. *Veneratio Augusti: Eine Studie zu den Tempeln des ersten römischen Kaisers.* Rome.

Hellenkemper Salies, G., ed. 1994. *Das Wrack: der antike Schiffsfund von Mahdia.* Köln.

Hellmann, M.-C. 2006. *L'Architecture grecque. Vol. 2: Architecture religieuse et funéraire.* Paris.

Henderson, J. 2001. "From Megalopolis to Cosmopolis: Polybius, or There and Back Again." In Goldhill, ed., 29–49.

Hoepfner, W. 1990. "Bauten und Bedeutung des Hermogenes." In Hoepfner and Schwandner, eds., 1990. 1–34.

Hoepfner, W. and E.-L. Schwandner, eds. 1990. *Hermogenes und die Hochhellenistische Architektur.* Mainz am Rhein.

Hoff, M.C. 2013. "Greece and the Roman Republic: Athens and Corinth from the Late Third Century bce to the Augustan Era." in

Evans, ed., 559–577.

Humann, C., J. Kohte, and C. Watzinger. 1904. *Magnesia am Maeander: Bericht über Ergebnisse der Ausgrabungen der Jahre 1891–1893*. Berlin.

Jones, A.H.M. 1971. *The Cities of the Eastern Roman Provinces*. Oxford.

Jones, C.P. 1999. *Kinship Diplomacy in the Ancient World*. Cambridge, MA.

Kondoleon, C., ed. 2000. *Antioch: the Lost Ancient City*. Princeton.

Krencker, D., and M. Schede. 1936. *Der Tempel in Ankara*. Berlin.

Lancaster, L.C. and R.B. Ulrich. 2013. “Materials and Techniques.” In Ulrich and Quenemoen, eds., 157–192.

Lauter-Bufe, H. 2009. *Das Heiligtum des Zeus Soter in Megalopolis*. Mainz am Rhein.

Lawrence, A.W. 1996. *Greek Architecture*. 5th ed. Revised by R.A. Tomlinson. New Haven.

Macready, S. and F.H. Thompson, eds. 1987. *Roman Architecture in the Greek World*. London.

McKenzie, J. 2007. *The Architecture of Alexandria and Egypt, c. 300 BC–AD 700*. New Haven.

McNicoll, A.W. 1997. *Hellenistic Fortifications from the Aegean to the Euphrates*. Oxford.

Millar, F. 1987. “Introduction.” In Macready and Thompson, eds., ix–xv.

Miles, M.M. 2008. *Art as Plunder: The Ancient Origins of Debate about Cultural Property*. Cambridge.

Mitchell, S. and M. Waelkens. 1998. *Pisidian Antioch: The Site and its Monuments*. London.

Pollitt, J.J. 1986. *Art in the Hellenistic Age*. Cambridge.

Price, S.R.F. 1984. *Rituals and Power: The Roman Imperial Cult in Asia Minor*. Cambridge.

Radt, W. 1999. *Pergamon: Geschichte und Bauten einer antiken Metropole*. Darmstadt.

- Ratté, C. 2008. "The Founding of Aphrodisias." In Ratté and Smith, eds., 8–36.
- Ratté, C., T.N. Howe, and C. Foss. 1986. "An Early Imperial Temple at Sardis." *AJA*, 90: 45–68.
- Ratté, C. and R.R.R. Smith, eds. 2008. *Aphrodisias Papers 4: New Research on the City and its Monuments*. *JRA*, Suppl. 70. Portsmouth, RI.
- Revell, L. 2013. "Romanization." In Ulrich and Quenemoen, eds., 381–398.
- Reynolds, J. 1987. "The Inscriptions." In De La Genière and Erim, eds., 81–85.
- Reynolds, J. 1990. "Inscriptions and the Building of the Temple of Aphrodite." In Roueché and Erim, eds., 37–40.
- Robertson, M. 1993. "What is 'Hellenistic' about Hellenistic Art?" In Green, ed., 67–110.
- Roueché, C. and K.T. Erim., eds. 1990. *Aphrodisias Papers: Recent Work on Architecture and Sculpture*. *JRA*, Suppl. 1. Ann Arbor.
- Roux, G. 1961. *L'Architecture de l'Argolide aux IV^e et III^e siècles avant J.-C.* Paris.
- Rowland, I.D. 2013. "Vitruvius and his Influence." In Ulrich and Quenemoen, eds., 412–425.
- Rowland, I.D. and T.N. Howe. 1999. *Vitruvius: Ten Books on Architecture*. Cambridge.
- Rubin, B. 2011. "Ruler Cult and Colonial Identity: The Imperial Sanctuary at Pisidian Antioch." In Gazda and Ng, eds., 33–60.
- Sewell, W.H. 1999. "The Concept(s) of Culture." In Bonnell and Hunt, eds. 35–61.
- Spawforth, A.J.S. 2012. *Greece and the Augustan Cultural Revolution*. Cambridge.
- Stewart, A. 2004. *Attalos, Athens, and the Akropolis: The Pergamene "Little Barbarians" and their Roman and Renaissance Legacy*. Cambridge.
- Stewart, A. 2006. "Hellenistic Art: Two Dozen Innovations." In Bugh, ed., 158–185.

Themelis, P.G. 2003. *Ancient Messene*. Athens.

Themelis, P.G. 2010. *Αρχαία Μεσσήνη: Ιστορία – Μνημεία – Άνθρωποι*. Athens.

Theodorescu, D. 1990. “La Restitution de l’Aphrodision: certitudes et perplexités.” In Roueché and Erim, eds., 49–65.

Tomlinson, R.A. 1961. “Emplekton Masonry and ‘Greek Structura’.” *JHS*, 81: 133–140.

Townsend, R.F. 1987. “The Roman Rebuilding of Philon’s Porch and the Telesterion at Eleusis.” *Boreas. Münstersche Beiträge zur Archäologie*, 10: 97–106.

Townsend, R.F. and M.C. Hoff. 2004. “Monumental Tomb Architecture in Western Rough Cilicia.” *JÖAI*, 73: 251–280.

Ulrich, R.B. and C.K. Quenemoen, eds. 2013. *A Companion to Roman Architecture*. Malden, MA.

Uz, D.M. 1990. “The Temple of Dionysos at Teos.” In Hoepfner and Schwandner, eds., 51–61.

Venit, M. 2002. *Monumental Tombs of Ancient Alexandria: the Theater of the Dead*. Cambridge.

Waelkens, M. 1987. “The Adoption of Roman Building Techniques in the Architecture of Asia Minor.” In Macready and Thompson, eds., 94–105.

Wallace-Hadrill, A. 2008. *Rome’s Cultural Revolution*. Cambridge.

Welch, K.E. 2007. *The Roman Amphitheatre: From its Origins to the Colosseum*. Cambridge.

Williams, C. 1974. “The Corinthian Temple of Zeus Olbios at Uzuncaburç: A Reconsideration of the Date.” *AJA*, 78: 405–414.

Wilson Jones, M. 2001. *Principles of Roman Architecture*. New Haven.

Winter, F.E. 2006. *Studies in Hellenistic Architecture*. Toronto.

Yegül, F. 1992. *Baths and Bathing in Classical Antiquity*. Cambridge, MA.

CHAPTER 32

Hellenistic Architecture in Italy: *Consuetudo Italica*

Thomas Noble Howe

Graecia capta ferum victorem cepit et artis intulit agresti Latio.

“Conquered Greece took captive her savage conqueror and brought her arts into rustic Latium.”

(Hor. *Epist.* 2.1.156–157)

A salient characteristic of Hellenistic architecture is its versatility: outside of its places of origin, it was borrowed for contexts different from those of earlier periods and yielded very different results. In Rome, it was appropriated assertively by the senatorial elite for monumental, public structures. The traditional architectural orders were combined with a totally different supportive technique – vaulting in *opus caementicium* – to create dynamic, coherent large spaces with hierarchical cross-axial compositions around a center. Architects designed engaged versions of the Greek architectural orders as a fictive metaphor for the tectonics of the underlying arcuated architecture by setting the rules of the orders as a control for the composition of arched construction. This radical advance from the old post-and-lintel supportive system retained the symbolic mantle of the orders and transmitted it into new settings.

The development of monumental Roman architecture may be divided into three broad epochs: in the late Regal period, and the early and mid-Republic (sixth–third centuries BCE), Roman architecture was an integral part of the Etrusco-Italic tradition of wood and mudbrick temples with terracotta cladding and houses on stone socles. In the course of the late Republic, there was a tremendous expansion of the repertoire of Roman monumental architecture, from circa 200 BCE to the mid-first century CE. Rome of 200 BCE had nothing to compare with the glistening white colonnaded stoas, sanctuaries, agoras, and elegant peristyle mansions of Athens, Pergamon, or Alexandria, even though it had just become master of half the Mediterranean world. Architects shifted from the Etrusco-Italic repertoire of ornament to the Greek (i.e., the canonical “orders”) and accepted its demanding rules of syntax. They created indigenous, original new building types and techniques

that used concrete-supported engineering. This led to the Roman “architectural revolution,” beginning in the 40s CE, when the new construction techniques based on Roman concrete, the play of the compass and straight-edge in geometry, and the flexible understanding of the syntax of the Greek orders created dynamic space-positive, vaulted architecture (Gros, 1996). The new types feature the interplay of curve and rectangle and a metaphorical, rhythmic use of engaged and freestanding orders that became an Empire-wide language for centuries to come. This chapter focuses on the contributions of Greek architecture to that third phase in Rome, the decisive Roman architectural revolution.

The Late Republic

Roman success in conquering peninsular Italy included shared benefits for Greek communities in southern Italy and Sicily, established in those regions beginning in the eighth century BCE. Rome’s senatorial and business elite moved freely in the circles of the elite of the Italian towns, many of which were fully Greek cities, and they derived much of their culture from this society. The fall of Syracuse to Rome in 211 BCE was followed by a huge influx into Rome of Greek portable art as booty, and it marked the beginning of Roman rule over formerly Greek areas that shared in the much older and (then) more sophisticated traditions of art and architecture. Rome had long been in contact with Greece, but in a series of four Macedonian Wars (214–148 BCE) that ended in the destruction of Corinth in 146 BCE, Rome was drawn deeply into Greek affairs, and finally mainland Greece was reorganized as four provinces ruled by senatorial proconsular governors. Despite the disruption of political strife, or in fact because of it, the period saw vigorous creativity in the use of architecture because of the great value of architecture as a political tool: foremost were the huge building projects of Julius Caesar and Pompey in the 50s BCE, but also the expression of status in the great villas of the super-rich political elite. A significant event in this process was the victory at Pydna (in Macedonia) of the army of L. Aemilius Paullus in 168 BCE. Firm Roman control over Greece resulted in a major realignment of commercial trade, with Rhodes now deprived of major trading rights and Delos handed to Athens as a free port in 167, which, along with all Greek lands, soon became flooded with merchants from all over the Mediterranean, especially from Roman-allied Campania and Latium.

The explosion of trade and the huge influx of wealth from military conquest, and from subsequent brutal extortion of wealthy Greek cities for several generations by increasingly venal senatorial governors, lasted down into the

Civil Wars of the first century BCE. The wars brought a huge influx of slaves into large-scale agriculture, mining, and domestic service but also a flood of art as booty, copies of art when the booty ran out, and highly trained professionals, such as itinerant philosophers, rhetoricians, artists, doctors, and architects, both paid and enslaved. Why was there such a demand for these art objects and talents? Because in this increasingly competitive political environment, impressive and innovative art and architecture were seen as politically useful (Miles 2008). The “Hellenization” of Roman architecture was largely, but not totally, a social and political tool of the remarkably efficacious Roman senatorial elite in a period of accelerated political competition (see [Chapter 31](#)).

The Power Culture of Senatorial Patronage

A crucial key to understanding the extraordinary efficacy of the Roman Republic in politics, war, and architecture is the character of the very well-educated senatorial elite, and the powerful hold that the electorate had over that elite. Since they had to be elected, and in a sequence of ever more senior offices with fewer posts toward the top, aspirants had to demonstrate that they had been effective in the previous one, and demonstrate this to a highly alert electorate. The top two offices, the consulate and praetorship, offered the opportunity of achieving such staggering political and financial wealth through military command and provincial governorship that one could even subvert the constitution. One man could indeed own a legion: Pompey owned two in 82 BCE at the age of 24, in effect given to him by the huge estate of his father, a former consul.

This was an elite that lived intensely public lives, *sub conspectu populi*, under the gaze of the people. They also lived surrounded by large household staffs, often including personal architects (e.g., Cicero’s “Cyrus”), and had vast tentacular networks of clients, of various social classes and professions, often running into the thousands. Under the pressure of the public gaze, and with their education and broad knowledge of the world around them, and connections throughout it, the main talent of a successful politically ambitious senator was discovering talent, finding new ideas with which to demonstrate their managerial efficacy, from Julius Caesar’s silvered weapons and female gladiators in his games of 63 BCE to his catapults and great architectural projects. Caesar understood architecture and could read plans, and he knew architecture as well as he knew law, military tactics, and religion.

Public Patronage in Rome

Almost all public building in Rome was initiated by senatorial initiative, and execution was delegated to individual senators or senators working in small administrative committees or *collegia* (e.g., *duumviri*, *tresviri*, etc.). The Senate had a variety of ways of assigning responsibility to manage building projects, both inside and outside the regular structure of the major magistracies. An example of a specific magistracy is the office of censor, whose holders controlled the leases on contracts for city walls, roads, aqueducts, and temples. Polybius, a Greek political prisoner brought to Rome after Pydna, says that the largest expense of the state in his period was public building (6.13.3). In 184 BCE, the censors M. Porcius Cato (Cato the elder) and L. Valerius Flaccus repaired drains, water supply, and roads, and built the first basilica, the Basilica Porcia. In 179 BCE, the censors M. Fulvius Nobilior and M. Aemilius Lepidus were given the entire *vectigalia* (tax revenue) for the year for building, and they repaired roads, aqueducts, harbors, and built the Basilica Aemilia-Fulvia and several *portici* and dedicated three victory temples (vowed earlier by others).

Other types of senatorial commissions for public buildings included victorious praetors and consuls who were awarded a triumph (*virī triumphales*) and could vow a temple before a battle and finance it from the spoils; many of these were built in the second century BCE along the triumphal route which ran from the Circus Flaminius outside the walls in the Campus Martius through the Circus Maximus to the Forum. They also were responsible for the development of the first truly monumental porticoes, starting with the Octavia in 168 BCE. In the last century of Republic, the censorial system of contracting broke down, and it became more common for the other magistrates (e.g., consuls and praetors) to assume the duties, or appoint individual or collegial senators as *curatores* (which had no term limit) to execute projects.

Budgets tended to be large and construction times for large projects short, because the Senate, so unlike any Greek city, was obsessive about keeping the treasury full. The rebuilding of the Temple of Jupiter Optimus Maximus after the fire of July 6, 83 BCE, using capitals from the Athenian Olympieion “imported” by Sulla, dragged on longer – from 80 BCE when Sulla Dictator had himself appointed the initial *curator*, until it was finished and dedicated by his associate Q. Lutatius Catulus in 62 BCE. How the appointment influenced design is hard to say, but it appears that senatorial “patronage” or “management” was in a position to be much more decisive, and hence experimental, than the average Greek urban or sanctuary building committee. Once appointed to the *cura* of a building project, senatorial magistrates seem to have been given a relatively free hand in managing the projects. As multifarious politicians and dilettantes, the competing senators and knights (*equites*) understood architecture very well.

Patronage: Centralized and Dispersed, Senatorial and Municipal

Rome and the senatorial elite were not the sole creators of Roman architecture in the late Republic. In fact, the wealth from conquest and trade in the second century BCE, particularly after 168 BCE, was rather broadly spread over much of Italy, and was shared with the “allies” of Rome, who supplied troops under Roman command but maintained much of their local autonomy. Many of these communities were managed by municipal councilors, who were the equivalent of Rome’s senators. Some areas, like “rough” Samnium, were not even urbanized. A. Wallace-Hadrill has argued convincingly that many of these centers were as ambitious in reworking their civic architecture as were the senators of Rome in the second century BCE, and many were in even closer contact with the Greek cities of southern Italy and Sicily (Wallace-Hadrill 2008: 73–143).

Near some civic centers were built massive hilltop platform sanctuaries with polygonal masonry, which emphasized their non-Greek/non-Roman identity, with little evidence of “Hellenistic” architecture at all (e.g., Aletrium, Ferentinum, Signia). Others developed the highly original integrated terraced theater-temples (e.g., Gaiii, circa 150 BCE; Praeneste, circa 130 BCE; Tibur, circa 100/75 BCE), which were by far the most innovative “Roman” buildings of their time. Still others had highly Hellenistic architecture, such as the elegant Doric Temple of Hercules at Cori or the Samnite national sanctuary at Pietrabbondante, whose theater is so similar to that at Pompeii as to appear to be by the same architect (Stek 2013). The sanctuary at Praeneste (modern Palestrina), very near Rome, was the result of the efforts of local elites who created the innovative complex by collaboration rather than Roman-style competition (Figure 32.1). The increasingly luxurious townhouses and villas of the senatorial elite in the later second and first centuries BCE may have taken their first cues from the Hellenized mansions of Campanian merchants and town councilors: the huge House of the Faun in Pompeii (circa 150 BCE) is earlier than any known Roman luxury villa. Many essential aspects of Roman architecture were created outside of Rome.

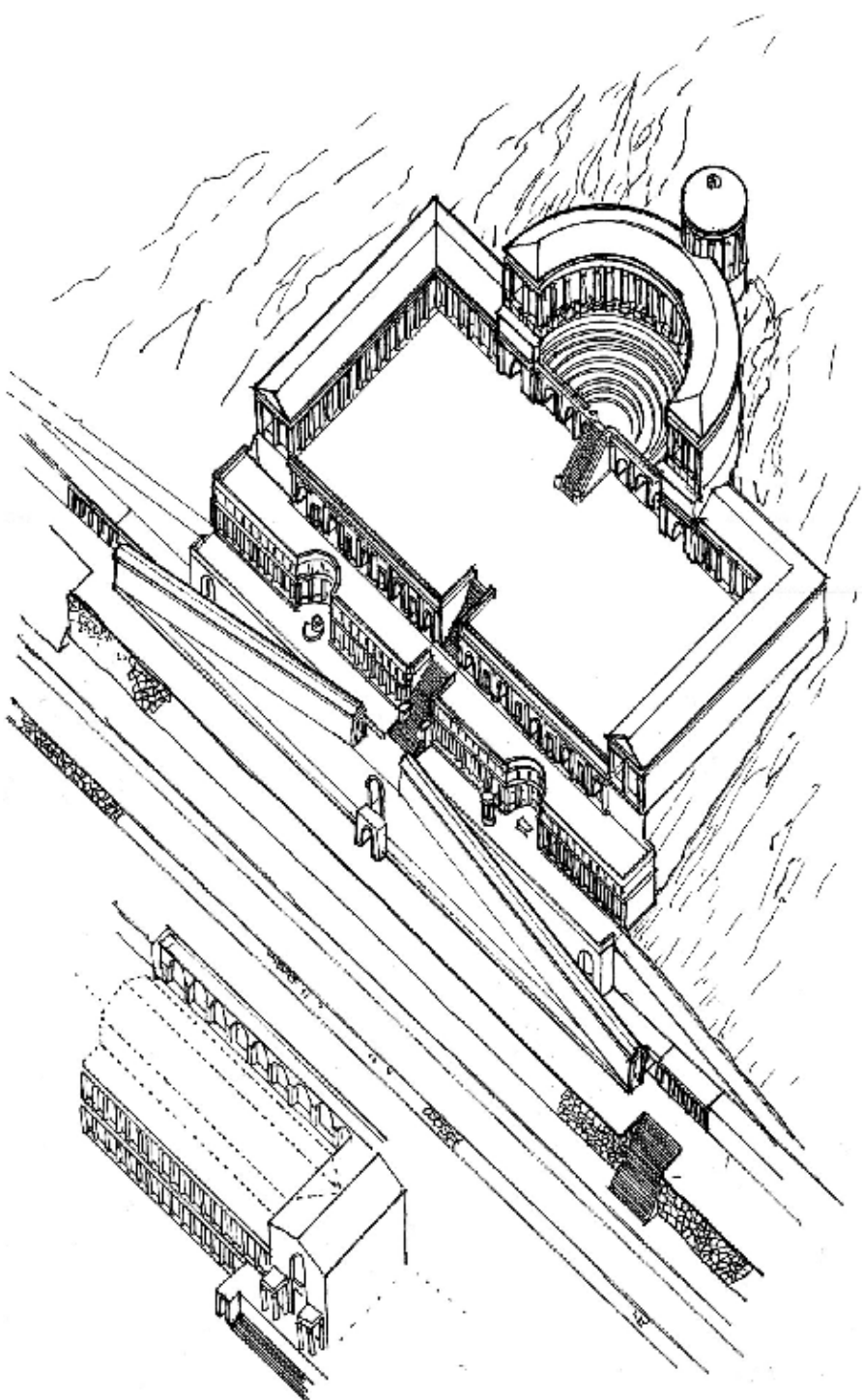


Figure 32.1 Sanctuary of Fortuna Primigenia, Praeneste, circa 130/110 BCE, reconstruction. Drawn by Thomas N. Howe, adapted from Boethius and Ward-Perkins 1970: figs. 78, 142.

Possibly, senatorial building curatores were freer to support innovation when they were operating outside Rome rather than inside. The masonry amphitheater was clearly invented outside Rome, since the earliest are in Campania, at Pompeii, Puteoli, and Abella, from 80/70 BCE (Welch 2007). The censors of the year 155 BCE attempted to build Rome's first permanent theater on the slopes of the Palatine (possibly inspired by the hillside theater-terrace at Pergamon) but were stopped by the Senate, since at Rome sitting indolently in the theater all day was held to be morally degenerative. Hence Rome continued to build, and tear down, temporary wooden theaters and amphitheaters till the end of the Republic.

The ability of the senatorial government to develop a comprehensive plan for maintaining a coherent infrastructure seems to have broken down during the increasing political competition of the late second and first centuries BCE. It has been argued that viri triumphales focused on building self-glorifying victory monuments (e.g., temples and arches) rather than monuments of social utility or identifying comprehensive social needs, as did the *aediles* of 193 BCE. The evidence often cited is that Augustus in 28 BCE "restored" some 82 temples (*Res Gestae* 20). Also from the time of the Gracchi brothers (tribunes of 133 and 123–121 BCE), the idea began to grow that the best way to maintain a coherent infrastructure plan was strong leadership with large resources. Sulla apparently attempted a comprehensive building program circa 80 BCE, and Julius Caesar actually initiated several huge projects in the 50s when he was on campaign in Gaul and later as dictator (48–44 BCE). Augustus took over and finished them after the civil wars, in his role as an adopted son, in a manner analogous to the traditional way in which triumphal temples and other buildings were dedicated: the father would vow and win, and the son would dedicate. The transition from collegial senatorial oversight to the single-patron model of Augustus in the 30s BCE took a century.

Architect and Builder

Almost all construction was done through contracting. There was a distinct profession of "architect" by the end of the Republic, but not necessarily before. A patron would normally rely on an *architectus* for the design and often the supervision of a project, but the bulk of the work would be contracted to a builder. The distinct profession of architect may have evolved out of the different exigencies that the new fashion of Hellenistic architecture imposed upon building, including correct knowledge of columnar forms, modular syntax, geometry, and proportions. Etrusco-Italic architecture, for instance, does not ever seem to have made use of modular proportions.

Competence and training varied. The architect Vitruvius, a “client” of Augustus and his sister Octavia, wrote the only surviving manual of architectural theory and practice from antiquity in about 30/20 BCE (Rowland and Howe 1999; Rowland 2013; for more on known Roman architects, see Anderson 2013; see also [Chapters 16](#) and [31](#)). He makes it clear that people calling themselves architects in his time could range from professionals like himself, trained in the liberal arts, to complete charlatans. By the early Empire, the training path for an architect could be one of three: training in liberal arts and then with a master; training and service in the military; and, by the later first century BCE, training in the imperial service.

The duties of a Roman architectus were highly variable. He could be responsible for the design of buildings, sometimes overseeing construction, or manage maintenance contracts, but he might also at times serve as a prime contractor, managing costs, although he did not finance a building project himself. He could be an all-purpose engineer, maintaining artillery or water supply. He controlled his design through drawings called *ichnographia*, *orthographia*, and *scaenographia* (plan, elevation, and perspective), and he communicated with patrons (e.g., senatorial censors, aediles, or curatores), who were expected to be knowledgeable in reading plans (Senseney 2011a; see [Chapter 16](#); [Figure 32.2](#)). It is clear that both Caesar and Cicero could read plans, and Cicero could criticize plans that were not clear (Cic. *Q Fr.* 3.1.2–5; Anderson 2013: 130–131). The architect’s fundamental drawing technique was drawing with rule and compass, an approach that was based in Euclidean education and established in Greek architecture as early as the sixth century BCE (see [Chapter 7](#)). This was essential to the development of highly coordinated large planned spaces of the type that began to appear in Rome by at least mid-second century BCE.



Figure 32.2 Via Cassia relief. The relief portrays what appears to be a senatorial *curator* (right, seated) supervising a construction project. The architect is portrayed twice, with a scroll in his hand.

Source: adapted from Adam 1989: fig. 90.

The social status and pay-scale of architects also seems to have been highly variable. Some, like a certain Cossutius, a Roman citizen who was engaged by Antiochos IV Epiphanes (175–164 BCE) to finish the Olympieion in Athens, may have belonged to a wealthy family of contractors that worked for several generations out of the great international port of Puteolis, near Naples. There is some indication that the Greek Hermodoros of Samothrace, the architect imported by Q. Caecilius Metellus Macedonicus in 146 BCE to design the first marble temple in Rome, was sought-after and well-paid. There were a few dilettante amateur senators, too. Q. Mucius Scaevola, proconsul of Asia in 97 BCE, has been reasonably linked with the C. Mucius that Vitruvius names as responsible for one of two “perfect” peripteral temples in Rome, the Temple of Honos and Virtus, built for Marius near the Marian monument (*De arch.* 3.2.5, 7.praef.17; Vitruvius does not name Mucius as an architectus, a title not appropriate of a senator). Others, such as Vitruvius, had parents who could afford a liberal arts education. Many were plainly of servile status, usually Greek, first- or second-generation immigrants. Roman literature is very nearly silent about the existence of any professional class, but gravestones attest to them as a solid, appreciated part of a “middle class.”

Several innovative Roman buildings may have called to mind famous Greek buildings, although the Roman result is so different that the relationship is often not apparent. The first permanent masonry theater in Rome, Pompey’s (60–55 BCE), was supposedly inspired by his visit to the huge theater at Mytilene on Lesbos. The natural hillock, which supports the theater on Lesbos, was replaced by a mountain of arcades on the flatland of Rome’s Campus Martius (Plut. *Pomp.* 42). The first monumental porticus, the Porticus Octavia of 168 BCE, may have called to mind the stoa partly wrapped around the obliquely oriented Athena Temple of Pergamon (see later in the chapter, and [Figure 32.3](#), no. 7), and the failed theater of 154 on the Palatine may have been inspired by the great hillside theater terrace at the same city.

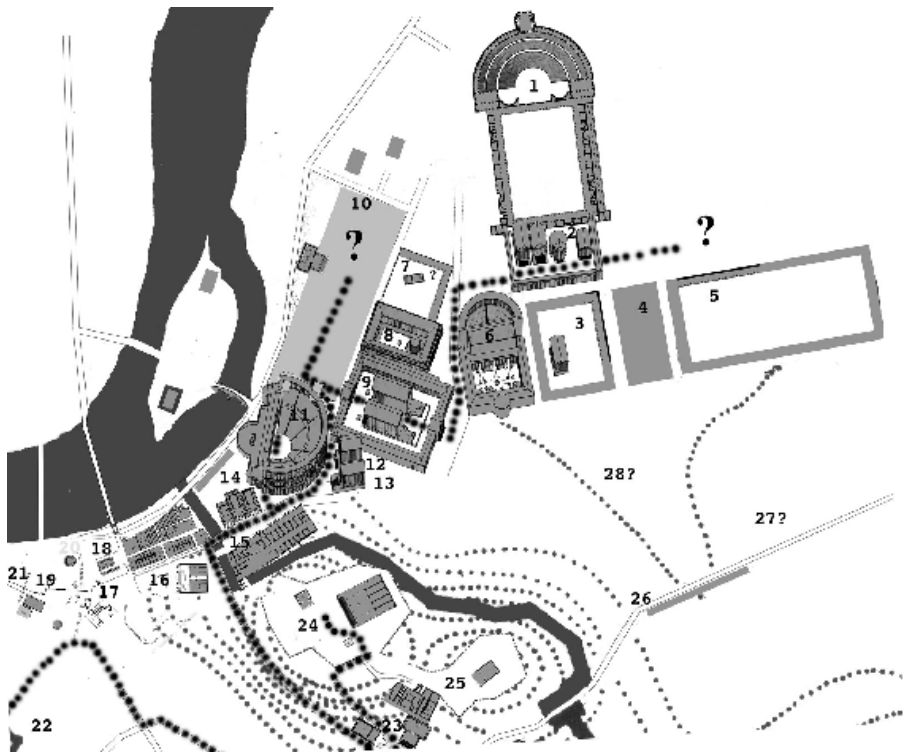


Figure 32.3 Campus Martius, as in mid-first century BCE, plan. 1. Theater and Porticus of Pompey; 2. Largo Argentina Temples and Porticus Minucia Vetus? (l. to r.: temples D through A); 3. Temple of the Nymphs? and Porticus Minucia Frumentaria? 4. Diribitorium; 5. Saepta Julia; 6. Theater of Balbus; 7. Temple of Neptune and Porticus Octavia; 8. Temple of Hercules Musarum and Porticus Philippi; 9. Temples of Juno Regina (u.) and Jupiter Stator (l.), and Porticus Metelli (later Octaviae); 10. Circus Flaminius; 11. Theater of Marcellus; 12. Temple of Apollo Medicus or in Campo; 13. Temple of Bellona; 14. Forum Holitorium temple and porticus; 15. Porta Triumphalis and Porta Carmentalis; 16. Temples of Fortuna and Mater Matuta, with arches of L. Stertinus; 17. Forum Boarium; 18. Temple of Portunus (prostyle temple, r.) and Temple of Hercules Olivarius (round temple, l.); 19. Ara Maxima Herculis; 20. Temple of Hercules Olivarius; 21. Toward the Porta Trigimena and Porticus Aemilia; 22. Circus Maximus; 23. Forum Romanum, NW end, with temples of Saturn and Concord and Tabularium; 24. Capitolium with Temples of Jupiter Optimus Maximus, Fides and the Tensarium; 25. Arx, with Temple of Juno Moneta; 26. Via Flaminia with Porta Fontinalis, and porticus; 27. Altar of Mars; 28. Villa Publica.

Source: digitally modified and redrawn, adapted from Stambaugh (1988: fig. 4) and Favro (1996: fig. 41).

The Etrusco-Italic Tradition

In the third and early second centuries BCE, Rome still looked like an Etruscan town, with few building types and little distinction between monumental architecture (e.g., temples) and vernacular architecture. The materials were mudbrick walls on stone socles, colonnaded with painted timber columns, and timber roofs, with wide-span timber beams clad in terracotta, highly decorated with stylized plant motifs in Etruscan versions of Greek or Near Eastern ornament, featuring the colors of fired natural clay (e.g., orange, red, black, with some white and blue appliqué). Elite houses and temples shared much of the same ornament (e.g., the Regia, the Pontifex Maximus' residence in the Forum). The common atrium house was well established in Roman and allied territories by the third century, and probably much earlier. There were also vivid multifunctional, highly social open spaces (*fora*), the distant ancestor of the Italian piazza. There was an inherent linear quality of movement in the layout of fora, which was retained, even as they became Hellenized and monumentalized in the second and first centuries.

A predisposition toward axial or cross-axial space seems to have been deeply rooted in Etrusco-Italic culture. It is reflected in the plan of the atrium of the traditional *domus*, in the practice of surveying, and in the ritual of augury (Rowland and Howe 1999: 152–154). Augury was a ritual designed to gain divine approval for, or disapproval of, human-proposed civic activities, and it included dividing visible open space to take the auspices in the resulting quadrants. Roman surveying practice, which laid out planned cities with two primary intersecting streets, *cardo* (north–south) and *decumanus* (east–west), was supposedly based on augury. The surveying grid records a direction of observation, also facing west: blocks are left or right of the *decumanus* beyond or behind the *cardo*. This grid-like orientation permeated daily life. The atrium house featured a linear view through interim dark and light spaces from front door to *tablinum*, passing the cross axis of the *alae* (“wings”) off the atrium and the vertical axis of the *impluvium* (roof opening for rain catchment).

Although this Etrusco-Italic tradition remained the vocabulary of Rome's public and private architecture down into the second century, Romans had made steady advances in the technology and infrastructure of architecture in the fourth and third centuries. The arch and vault appeared at the end of the fourth century both in Etruria and Rome – possibly an import from Macedonian military engineers working in the Near East – as do the first long-distance Roman trunk roads and aqueducts. Stone-faced concrete walls and vaults (*structura caementicia*) developed sometime between 250 and, at the latest, 150 BCE. Regular town planning on a grid and the military castrum were developed with Roman expansion and colonization from the later fourth century BCE. The conquest of Hellenistic Greece put at the Romans' disposition a huge expansion of the repertoire of cultural forms, which could

be used to indicate status – particularly by a competitive elite – but the new richness also threatened the functional clarity of the existing order. Hence to some Romans, like Horace a good century later, it almost looked as if Greece conquered Rome, not the other way around.

New Models from Greece

Despite the large amount of building during the late Republic, the archaeological remains of architecture from that period are relatively sparse. The result is that we often know something about the plans of Republican architecture but rarely much about their elevations, and, thus, we often do not know the extent to which Greek orders replaced Etrusco-Italic forms. Many early buildings are known only from literary sources. It appears very possible that true Greek columnar orders were not employed in Roman Italy before 200 BCE (excepting, of course, the Greek and Oscan towns of southern Italy, which by then were Roman *socii*).

Many historians would see the third century BCE as the critical century of Hellenization in Rome. Rome had had diplomatic relations with Hellenistic Greek kingdoms since the war with Pyrrhus of Epirus (280–275 BCE) and an alliance with the Ptolemies of Egypt since 273 BCE. Almost all the political elite spoke respectable Greek and knew Greek literature and philosophy. The second half of the century marks the rise of written history and poetry (e.g., Fabius Pictor, Ennius) and of various types of theater based on Greek plays (e.g., Livius Andronicus, Plautus, Terrence) performed on temporary wooden theaters at the annual religious festivals. Yet it was also a period of increasingly desperate wars (e.g., the Pyrrhic War, First and Second Punic Wars), when Rome had to dig to the depths of its resources to survive. In the third century, Rome built fleets, not buildings.

The period of true monumentalization of architecture with a Hellenistic repertoire seems to date only after circa 200 BCE. This date broadly corresponds to the perception of Roman historians. Livy states that “the beginning of foreign luxury were introduced in to the city by the army from Asia (Greek Asia Minor)” about 187 BCE (39.6.7). The siege of Syracuse and M. Claudius Marcellus’ triumph in 212 BCE, laden with Greek art, is also cited as a turning point (25.40.2). The building boom which brought about the shift in architectural vocabulary depended upon the rapid economic recovery after the Second Punic War and the huge wealth that poured in from further conquest (mainly of Greek lands) and from the commercial centers like Delos after 167. After the Battle of Pydna (168), Roman citizens across Italy even ceased to pay to the vectigalia (general tax). Rome found itself in a very different position in the Mediterranean world: instead of being intimidated by the splendor and power of the Hellenistic kingdoms, it was on the way to

becoming their master.

The Discipline of the Greek Orders: The Hellenized Late Republican Temple

The initial vehicle of Hellenistic monumentalization was probably the small victory temples vowed by the *vir triumphalis* before a battle and paid for by his share of the *manubiae* (booty). The tradition went back to the early Republic and these temples were scattered over the whole city in positions where high visibility would enhance the commander's family reputation. The most favored venue for the later examples was the path of triumphal processions from the Circus Flaminius to the Forum (Figure 32.3 and Figure 32.4).

In placing triumphal temples, location was often chosen to communicate a personal message, and temples would carry the inscription and often the name of the dedicator. The Temple B in the Largo Argentina is apparently the Temple of Fortuna Huiusce Diei, dedicated by Marius' colleague Q. Lutatius Catulus after his victory over the Cimbrones in 101 BCE, and was placed next to a temple probably dedicated by his ancestor (Temple A, probably to Juturna) at the end of the First Punic War in 241. The Temple of Spes in the Forum Holitorium was vowed by A. Atilius Caiatinus, consul of 258, commander in the war with Carthage in Sicily, and placed near to the Temple of Janus vowed by C. Duilius, consul of 260 and the victor of the first great naval battle in the First Punic War, because he wanted to show that he continued the policy of Duilius by pursuing the war in Sicily, rather than Sardinia. At the trial of M. Aemilius Scaurus in 54, Cicero was able to evoke sympathy for the blatantly guilty extortionist governor of Sardinia by pointing to the temple behind him (the Temple of Castor and Pollux), which was rebuilt by his maternal grandfather, Q. Caecilius Metellus Dalmeticus, in 117 BCE (Figure 32.4).

Almost all the surviving victory temples that were built before 100 BCE survive only in a heavily rebuilt state, so that the original form cannot be determined. Most of the temples of the third century BCE are clearly Etrusco-Italic in plan (Figure 32.3, nos. 2, 14, 16), with short proportions and a single or triple cella, either with a cella flanked by columns and a deep front porch but no columns at the rear (*peripteros sine postico*) or with a cella flanked by an open corridor (*alae*). They generally stood on a high podium with a wide frontal porch with steps only at the front (e.g., Temple C in Largo Argentina). A few of those built in Rome in the third century appear to have more elongated plans characteristic of Greek architecture, and in their later rebuildings of second and first centuries BCE clearly have Greek orders of

travertine or marble (e.g., the temples in the Forum Holitorium). Some temples, which have been well studied, were clearly originally built with Italic superstructure and Hellenized later, such as the Tempio della Pace in Paestum, first built after 273 and rebuilt circa 100 BCE as a mixed Corinthian–Doric temple peripteros sine postico. The Temple of Castor and Pollux in the Forum was a three-cella Etrusco-Italo tetrastyle prostyle, first built circa 496 BCE after the Battle of Lake Regillus and was transformed into a gorgeous Corinthian octostyle peripteros sine postico during the rebuildings by triumphator L. Caecilius Metellus Dalmaticus in 117 BCE, and again by Tiberius in 6 CE.

The Hellenized late Republican temple of post-200 BCE retained many features of the Etrusco-Italic predecessor, which distinguished it from a Greek temple (Figure 32.5): it is highly frontal and axial, on a high podium with only frontal steps, and with a deep porch. Yet the plans are more elongated. The handling of the Greek moldings tends to have more shadow-casting plasticity and projection than most Greek carvings, a characteristic both of Etrusco-Italic and southern Greek craftsmanship. Often the altar is incorporated directly on axis into the steps, and there is sometimes a *rostra* (rostrum or speaker's platform) as well. The Hellenized Republican temple with Greek orders had thicker columns, more densely spaced than in Italic examples. The arrival of “correct” Hellenic orders brought a new discipline and new materials, and probably required the training (or importing) of a different kind of architect.

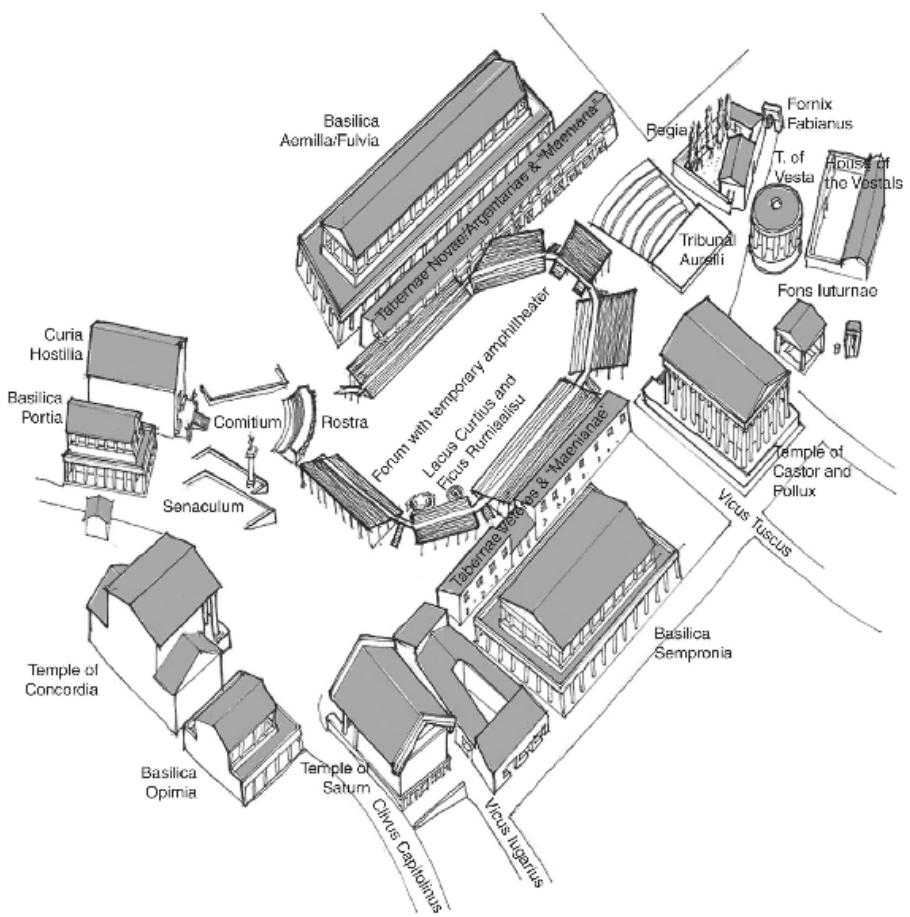


Figure 32.4 Forum Romanum, second century BCE.

Source: adapted from Stambaugh (1988: fig. 8), redrawn by Thomas N. Howe.

Another feature common in later Republican podium temples is the *pseudoperipteros*: a prostyle temple with engaged columns on the cella giving the idea of a true peripteral temple (e.g., Portunus, [Figure 32.5](#); Tibur, Temple of the “Sibyl”). Not of course a Roman invention, Vitruvius describes this as “removing the walls of the temple ... to the intercolumniation ... to create a more spacious interior” (*De arch.* 4.8.4). Perhaps there was a greater concern in Italian architecture with maintaining coherent volumes of interior space in temples than is normal in Greek architecture. Architects were using the orders in a decorative way while still maintaining the proportional rules of freestanding columns, and in turn, the engaged columns became metaphors of structure and controllers of composition.

The first marble temple in Rome, dedicated to Jupiter Stator, was built by Q. Caecilius Metellus Macedonicus and his architect Hermodoros of Salamis next to the preexisting temple to Juno Regina in the new Porticus Metelli after his triumph in 146 BCE. It is reported to have been a peripteros, and therefore

was almost certainly fully Greek and “ordered,” though apparently with steps on the front only (Vitr. *De arch.* 3.2.5). Hence, one unquestionably Greek architect working in Rome clearly had begun the practice of developing a specifically Roman way of using Greek forms, that which becomes *consuetudo italica*.

Fully Hellenized Roman temples are attested firmly in the archaeological record only at the end of the second century by a number of well-preserved small podium temples (e.g., Portunus in Rome, [Figure 32.5](#); the Sibyl at Tibur; Hercules at Cori) and a couple of peripteral tholoi (round temples): the Temple of “Vesta” at Tibur and the very Greek Temple of Hercules Olivarius in the Forum Boarium of Rome, built of Pentelic marble and very likely executed by Greek craftsmen ([Figure 32.3](#)).

The Discipline of the Greek Orders: The Articulated Wall

One major innovative development of the Greek orders in Roman contexts was the integration of arcuated form into the syntax of the orders. Arches entered Etruscan and Roman repertoire originally in simple, utilitarian applications, probably in the late fourth century BCE. The first known monumental triumphal arches (*fornix/fornices* or *arcus/arci*) were built in 196 BCE by L. Stertinus, celebrating a victory (but not a triumph) in Spain. He built three, but we do not know the form, other than that they carried statues and probably served as axial gateways to precincts (Livy 33.27.4). The form was probably taken from monumental arched city gates, in effect, a part of the wall excised from the city wall and made freestanding. Arched city gates of course are an ancient Near Eastern motif (often between twin towers) and have always had sacral or triumphal significance, but the three of Stertinus were especially calculated to communicate triumph, since the two near the temples are right next to the Porta Triumphalis where triumphal processions entered the city, and the third is in the Circus Maximus through which the processions passed.

The arch proved to be a versatile type, and a definitive moment is seen in the Doric lower story of the Tabularium, the presumed records office at the northwest end of the Forum (78 BCE; [Figure 32.6](#)). In this “fornix” design, half-columns frame the open arches, with a traditional entablature running above the columns and arched openings. The half-columns are engaged to regularly spaced arcade piers, and the springing of the arch is articulated by an impost molding that appears to pass through or behind the engaged column. The entablature articulates the main floor levels, and an impost molding articulates the springing of the archivolt (a Greek invention). The applied

decoration, thus, creates a dual articulation of load and support. In the post-and-lintel engaged order, the entablature articulates the actual floorline (i.e., the load) and the columns align with piers making “visible” the load actually passing through the piers (i.e., the support). The arcuated structure is articulated into archivolt and spandrel (i.e., the load) and the pier (i.e., the support). The orders thus serve as fictive metaphors for an arcuated structure by using engaged orders as applied decoration, but in a way which still obeyed the syntax of freestanding Hellenic columns and entablatures. This new type of design combines the old Greek orders with the new arcuated supports: it would be used for many centuries to come and revived in the Renaissance and beyond, and into contemporary use, even in modern houses.

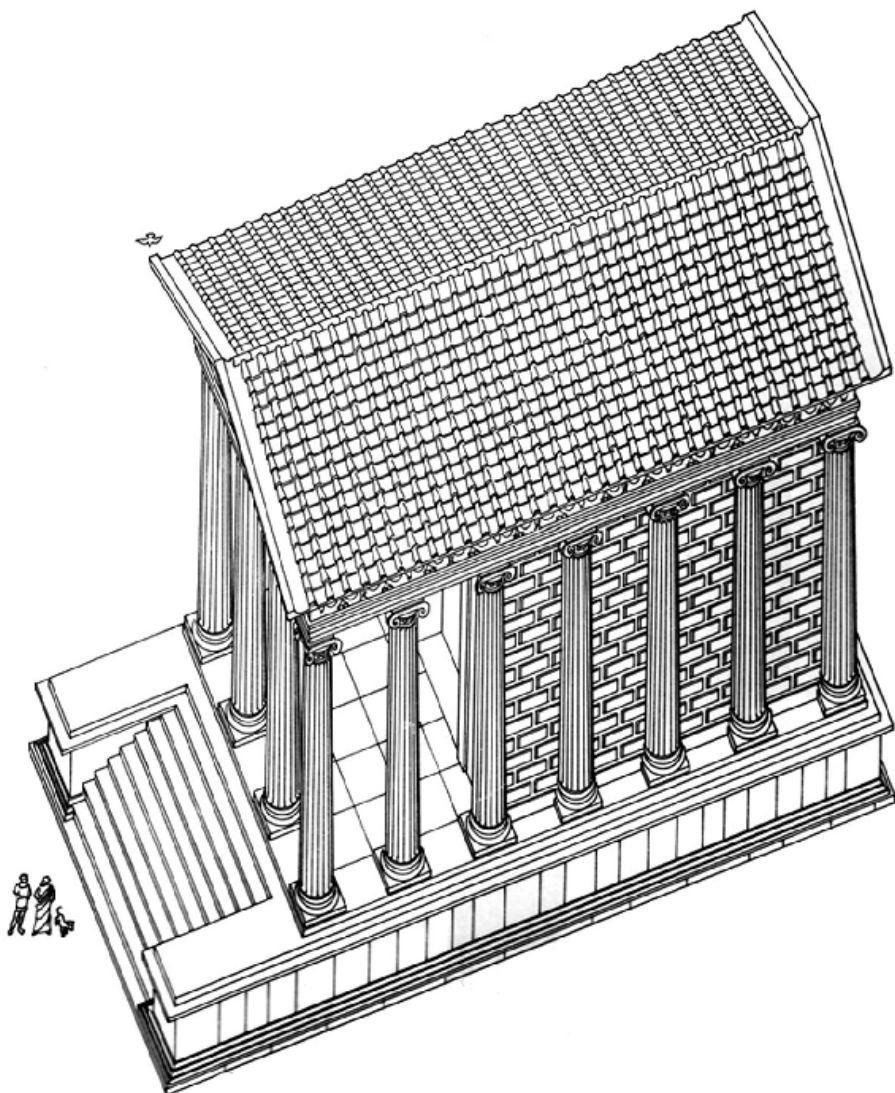


Figure 32.5 Temple of Portunus.

In Rome, the Tabularium/fornix motif brought the arch and vault into the realm of monumental architecture. It is featured in the Theater of Pompey (60–55 BCE; [Figure 32.3](#), no. 1) and later in the amphitheater of Statilius Taurus (34–29 BCE) and theater of Marcellus ([Figure 32.3](#), no. 11), where it was applied to the exterior piers that supporting the seating. The motif became a major compositional device for the exteriors of basilicas and eventually amphitheaters. Previously the barrel vault was largely confined to utilitarian architecture (e.g., substructures, city gates, drains, warehouses, and *navalia*, or shipsheds), and now, with the new applied Greek orders, form, and support could be expressed and made monumental.

At about the same time, we find the idea of walls articulated with columns, pediments, and entablatures expressed in wall painting (e.g., Second Pompeian Style, circa 100/80 BCE). Although this is a form of interior decoration (mostly domestic), it is likely that it owes something to actual theater façades, and, above all, suggests the prestige intrinsic to walls articulated with ordered architecture as a decorative motif. This decoration type came to be used widely, in victory arches, houses, tombs, and libraries. The use of colored marble (painted or actual) gave added status.

The Ordering of Large Spaces: Basilica and Porticus

The aediles, censors, and viri triumphales of the early second century took the leading hand in the creation of new building types. They did so with a steady eye on the cities of the Hellenistic East with their royal halls and great agoras and sanctuaries surrounded by stoas. The basilica is arguably the first large, and high, interior space in antiquity. The origin of the basilica is long debated, but a recent theory argues that a significant element was the appropriation of the form of a type of royal audience and banqueting hall common in Hellenistic Egypt (Welch 2003). The Roman basilica is dependent upon the long-span Greek timber truss that appears in Hellenistic bouleuteria (see [Chapter 24](#)). The first large-scale basilicas were the Basilica Aemilia-Fulvia, let by the censors M. Aemilius Lepidus and M. Fulvius Nobilior in 179, and the Basilica Sempronia let by censor T. Sempronius Gracchus in 169 BCE. They were long and narrow, columnar, open to the sides with one back wall, probably with two-story aisles and columnar façades facing the Forum, and had a clerestory. The purpose was to house the increasing activity of businessmen and trials.

The victory temples built in the third and second centuries BCE in the Campus Martius tended to line up in parallel rows because they were built

facing orderly open areas. This habit of ordering space generally does not occur in earlier Greek architecture. The treasuries on the terrace at Olympia line up tidily on a terrace, facing the temenos, but those at Delphi do not take a shared orientation from the road (see [Chapter 9](#) and [Chapter 10](#)). As in the older temples in the Forum, these temples faced perpendicularly on to passing roads. The Etrusco-Italic temples of this group were not masses in space, as in the Greek classical tradition, but had a firm, frontal relationship with large public spaces.

Initially, the building boom of the early second century focused on solving pressing practical issues of urban growth neglected in the Punic Wars. Most of the early porticoes were intended to give cover for people doing various types of business. There was a substantial change of direction in 168 BCE, with the Porticus Octavia built by Gn. Octavius, the praetorian fleet commander at Pydna ([Figure 32.3](#), no. 7). It was the first portico vowed by a *vir triumphalis*, instead of a temple, and, whatever an earlier porticus might have looked like, it took a clear step in the direction of Hellenistic splendor, since Pliny tells us it had Corinthian capitals in bronze (*NH* 34.9). The idea to build a stoa/porticus as a triumphal monument might have been picked up from observations during travels in Greece, where several of the most prominent stoas were donations of Hellenistic kings in prominent Panhellenic places like Athens, Delphi, and Olympia. It also may have framed a preexisting Temple of Neptune, appropriate for celebrating a sea victory (Senseney 2011b).

The most definitive step to the axial temple-sanctuary-forum was the Porticus Metelli of 146–43 BCE, not only built around a pre-existing Temple of Juno Regina, dedicated by the censor M. Aemilius Lepidus in 179 BCE, but also one which was aligned with the Circus Flaminius. The Porticus included a second new temple, to Jupiter Stator, dedicated by Metellus Macedoniucus and his architect Hermodoros and placed parallel to the Temple of Juno ([Figure 32.3](#), no. 9). The temples must have employed fully Greek orders and a peripteral plan, but the architect adapted to local conditions with a podium, frontal steps, and a deep porch with an open space in front of the cella. The site is known from both the Severan Marble plan and the rebuilding of the porticoes in marble in the 20s BCE by Augustus, when it was renamed the Porticus Octaviae in honor of his sister. As the first quadriporticus in Rome, the Porticus Metelli was followed by a succession of others, which gradually turned the Campus Martius from an open field outside the walls to a succession of porticoed enclosures ([Figure 32.3](#), nos. 1, 2, 3, 5, 8).

Initially the porticoes were more or less places to loiter while observing theater events or the theatrics of politics. But they gradually acquired multiple functions as the city sprawled outside the walls into the Campus Martius to engulf the structures, for example, the Porticus Frumentaria was where the certificates for the grain dole were distributed, and the Saepta was built to house the elections of the Comitia Centuriata. After elections ceased under

Augustus, the Saepta became a multifunctioning art, antique, and slave market.

From Hellenistic to Roman

For political history, the end of the Hellenistic period is most commonly held to be in 31 BCE, with the Battle of Actium. In architectural culture, though, the period from Julius Caesar through Augustus, or a little later, should probably be regarded as a unit, and as the concluding phase of the Hellenistic period in Italy. Throughout this period, from the start of Pompey's and Caesar's big building projects to the end of the reign of the second Julio-Claudian emperor Tiberius (circa 60 BCE–14/40 CE), the culture of the arts was still cosmopolitan and still Greek-dominated. Caesar's great plan to reshape Rome and divert the Tiber in 45 BCE apparently relied on a Greek architect. In the Augustan age, builders, such as Vitruvius, constantly turned to Greek architecture as a central point of reference in the placing of architecture on a rational basis. The period is marked by the shift from competitive senatorial patronage to a single patron: the emperor. Right from the outset in the 50s BCE, the pattern for the single patron was established by the huge comprehensive projects of Julius Caesar and Pompey, each vying to be the *princeps*, that is, the one and only "First Man in Rome." Until about 30 BCE, pairs of patrons competed with large-scale projects, each with other followers as builders and some minor competitors: Caesar versus Pompey, Octavian/Augustus versus Mark Anthony.

One of the most remarkable creations of this period of explosively accelerating political competition was the Roman palatial villa, particularly the so-called villa maritima built on a spectacular seacoast or hillside and combining the Hellenistic arts of architecture, gardening, art collecting, philosophy, and cuisine. Romans were known to have had villas in the Bay of Naples area since that of Scipio Africanus at Liternum in the 190s BCE and that of Cornelia, the mother of the Gracchi, at Misenum in the 130s BCE, but the truly palatial villa was a rapid creation of the period just after the Social War of 91–89 BCE. It took part of its cue from the earlier palatial *domus* of the newly rich Campanians, such as the House of the Faun in Pompeii (circa 150 BCE). We know tantalizingly little about the actual architectural character of the development of the ostentatious *domus* in Rome in the first century, but the literary sources make it clear that the growth was explosive. Pliny remarks: "In 78 BCE there was no finer house in Rome than that of Lepidus, but only 35 years later it was not even in hundredth place" (*NH* 36.109). Varro (116–27 BCE) deplores the cupidity of his generation when everyone competed to have the biggest and most elaborate villa (*Rust.* 1.13.7).

The main center of the villa culture of the later Republic was further south in

the Bay of Naples around Baiae, Misenum, and Puteoli, a place favored for its beauty and wealth but also for the strong presence of Hellenistic Greek culture. The one place where the archaeological record preserves what these places looked like is at Stabiae near Pompeii. Here six enormous villas cluster directly next to each other along the edge of a sea cliff next to an insignificant town (Figure 32.7). One can read almost the entire history of the villa evolution between circa 80 BCE and 80 CE in these villas. The oldest, the Villa Arianna, corresponds to the Vitruvian villa with peristyle preceding the Atrium, the reverse of the arrangement in the towns where the atrium always comes first. Laid out perpendicular to the seacoast, it features the axial view from the entrance through alternating shaded and lit areas to the sea.

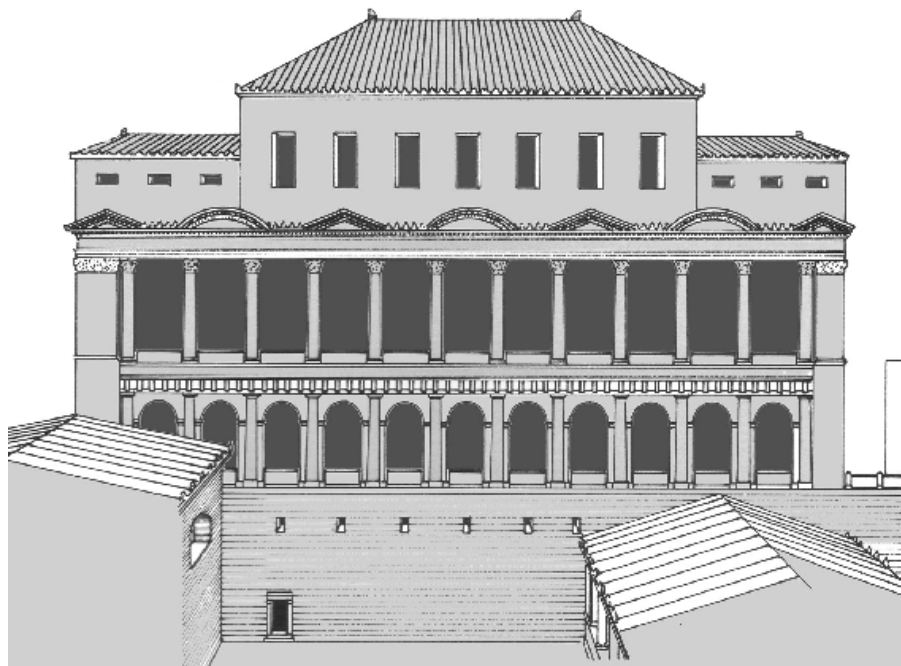


Figure 32.6 Tabularium, Rome, 78 BCE, reconstruction; upper story is conjectural and may have repeated the lower story.

Source: adapted from Delbrück 1907–1912: Taf. III.

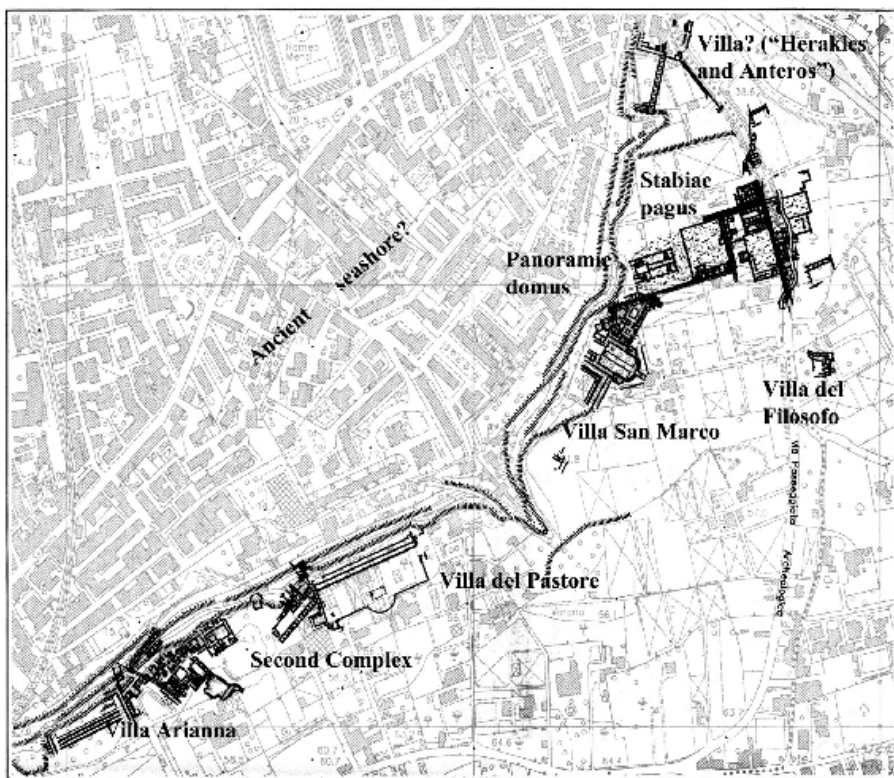


Figure 32.7 Stabiae villas.

Source: adapted from Soprintendenza Archeologica di Napoli e Pompei/Fondazione Restoring Ancient Stabiae.

With the Augustan peace there seems to be a substantial shift in elite villa design at Stabiae. The atrium begins to atrophy, the axial view is abandoned for surprising transitions between highly controlled, enclosed cross-axial spaces, and there is a development of a panoramic sensibility opening to and framing ambient landscape. The Villa San Marco and Villa del Pastore are laid out parallel to the coast and feature panoramic views from enclosed disconnected spaces. The three largest villas feature a peristyle garden, which is close to two stades in circumference (about 1200 ft), the size Vitruvius recommends for a public palaistra (*De arch.* 5.11.1).

Many dining rooms and even some apartments feature front and back views of sea and mountains. In moving through the villas, particularly Villa San Marco, one winds through a series of powerfully shaped enclosed spaces, each often with cross-axial composition and panoramic outreach to the environment, but the junction between spaces is often surprising and even disorienting. This experience anticipated the spatial disjunction and surprise provided by passing through the completely enclosed spaces of the Imperial Fora in Rome and later in Hadrian's villa. In the Augustan period, the Villa Arianna was transformed into a panoramic villa by addition of a string of new

rooms and a great peristyle garden along the cliff edge.

Cross-axial spatial control and panoramic framing pass even into garden design. Recent discoveries in the great peristyle garden at Villa Arianna show two large beds to be fictive *selvae* – semi-wild gardens – like those portrayed in the famous frescoes of the Villa of Livia at Prima Porta, but it is also planted with rows of trees to create an interaction of cross axial space and an outreach to the panoramas. These features reflect the same sensibility embodied in picturesque architectural vignettes – “sacro-idyllic” landscapes and vignettes of seaside villas – attributed by Pliny the Elder to a certain painter Studius in the Augustan period (*NH* 35.116–117). These movements are part of an opening up of the villa to ambient nature, increasing the drama of spatial control, as well as increasing individual inventiveness in design. It also seems to be part of the development of a heightening of the notion of professionalism, perhaps even the rise of the profession of landscape architect *per se* (e.g., the word *topiarius* appears in this time in the Latin language).

The models for the elements of this new type of villa of the first century BCE were Hellenistic, but probably not the Hellenistic palaces. The luxurious peristyle gardens of the great villas imitate not Hellenistic palaces, but Hellenistic public architecture, like agoras and sanctuaries. Subsequently the little peristyles of fashionable houses of Pompeii imitate the great gardens of the great villas (Zanker 1979, 1998; Wallace-Hadrill 1994: 16–37). One might be tempted to attribute this supremely self-confident appropriation not only to the ego of near-regal *viri triumphales* returning from Pergamon or Alexandria but perhaps also to the awareness that Roman senatorial *domus* were highly public places to start with. Vitruvius explicitly states that magistrates should have houses with basilican halls and libraries, since public judgments are often conducted in them (*De arch.* 6.5.2). The basilica-like hall in the House of the Mosaic Atrium in Herculaneum and the temple-like *fastigium* (pediment), which appears over some garden *triclinia* like that in the House of the Menander and the House of the Golden Cupids in Pompeii, are cited as smaller-scale examples, with a very distant heritage in the public spaces of the Greek East.

Augustus’ architecture, from the Apollo temple on the Palatine to his Forum of Augustus, dedicated in 2 BCE, developed a non-triumphal imagery of peace and order by the elegant adaption of Athenian Classical and late Classical forms, rather than more ostentatious Hellenistic models (Zanker 1988). Augustus’ architecture is almost a step back from the development of hierarchical composition and syncopated rhythms of orders tentatively apparent in the Second Style and Sicilian theater façades. Eclecticism marked a new age of self-confident building and a new, wholly “Roman” attitude that accelerated in the coming centuries. After Augustus, our knowledge of what the political elite is thinking almost shuts down. It becomes a culture of a court, closed and full of authoritarianism and intrigue. Yet most “good”

Roman emperors still behaved as if they were elected and were obliged to continue to hunt for talent to provide innovative services to the populace. By the end of the first century CE, they created the world's most comprehensive architectural infrastructure. Perhaps this still-senatorial ethic is embodied in a much later story about Hadrian who, when he refused to hear a woman's petition, was accosted by her, saying, "Well then, cease being emperor" (Cass. Dio 39.6). He took the petition. And this may go a little way to explain how the most definitive phase of the creation of Roman architecture occurred under the Empire.

FURTHER READING

Interest in Hellenistic architecture in Italy is growing. The recent volume by Ulrich and Quenemoen (2013) includes several relevant contributions on Greek architecture in Republican Rome (Davies), the use of Greek architecture in the late Republic and early Empire (Nielsen), extra-urban sanctuaries (Stek), and villas (Zarmakoupi), along with discussions of Roman architects (Anderson; Rowland). For more on the influence of Hellenistic architecture on the Roman temple form, see Gros 1996 and Stamper 2005: 49–67. Scholarship on Roman domestic structures and villas, whether urban or suburban, includes Zanker 1979 and 1998, Clarke 1991 and Wallace-Hadrill 1994. The most recent work on villas is Zarmakoupi 2014, who examines the luxury associated with the architectural forms of the villas on the Bay of Naples, including elements considered to be Hellenistic, while also surveying the Villa of the Papyri, Villa Oplontis, and the Stabian villas.

REFERENCES

- Adam, J.-P. 1989. *La Construction romaine: Matériaux et technique*. Paris.
- Anderson, J.C. 2013. "Architect and Patron." In Ulrich and Quenemoen, eds., 127–139.
- Boethius, A. and J. Ward-Perkins 1970. *Etruscan and Roman Architecture*. Harmondsworth.
- Clarke, J.R. 1991. *The Houses of Roman Italy, 100 B.C.–A.D. 250: Ritual, Space, and Decoration*. Berkeley.
- Davies, P.J.E. 2013. "Rome and Her Neighbors: Greek Building Practices in Republican Rome." In Ulrich and Quenemoen, eds., 27–44.

Delbrück, R. 1907–1912. *Hellenistische Bauten in Latium*. Strassburg.

Favro, D. 1996. *The Urban Image of Augustan Rome*. Cambridge.

Gros, P. 1996. *L'Architecture Romaine, du debut du III^e siècle avant J.-C. à la fin du Haut-Empire. 1: Les monuments publics*. Paris.

Miles, M.M. 2008. *Art as Plunder*. Cambridge.

Nielsen, I. 2013. “Creating Imperial Architecture.” In Ulrich and Quenemoen, eds., 45–62.

Rowland, I.D. 2013. “Vitruvius and his Influence.” In Ulrich and Quenemoen, eds., 412–25.

Rowland, I.D. and T.N. Howe. 1999. *Vitruvius: Ten Books on Architecture*. Cambridge.

Senseney, J.R. 2011a. *The Art of Building in the Classical World: Vision, Craftsmanship, and Linear Perspective in Greek and Roman Architecture*. New York.

Senseney, J.R. 2011b. “Adrift Toward Empire: The Lost Porticus Octavius in Rome and the Origins of the Imperial Fora.” *JSAH*, 70: 421–441.

Stambaugh, J.E. 1988. *The Ancient Roman City*. Baltimore.

Stamper, J.W. 2005. *The Architecture of Roman Temples: The Republic to the Middle Empire*. Cambridge.

Stek, T.D. 2013. “Monumental Architecture of Non-Urban Cult Places in Roman Italy.” In Ulrich and Quenemoen, eds., 228–247.

Ulrich, R.B. and C.K. Quenemoen, eds. 2013. *A Companion to Roman Architecture*. Malden, MA.

Wallace-Hadrill, A. 1994. *Houses and Society in Pompeii and Herculaneum*. Princeton.

Wallace-Hadrill, A. 2008. *Rome's Cultural Revolution*. Cambridge.

Welch, K.E. 2003. “A New View of the Origins of the Basilica: Atrium Regium, Graecostasis and Roman Diplomacy.” *JSAH*, 17: 5–34.

Welch, K.E. 2007. *The Roman Amphitheater: From its Origins to the Colosseum*. Cambridge

Zanker, P. 1979. “Die Villa als Vorbild des späten pompejanischen Wohngeschmacks.” *JDAI*, 94: 460–523.

Zanker, P. 1988. *The Power of Images in the Age of Augustus*. Ann Arbor.

Zanker, P. 1998. *Pompeii: Public and Private Life*. Cambridge, MA.

Zarmakoupi, M. 2013. "Private Villas: Italy and the Provinces." In Ulrich and Quenemoen, eds., 363–380.

Zarmakoupi, M. 2014. *Designing for Luxury on the Bay of Naples: Villas and Landscapes (c. 100 BCE–79 CE)*. Oxford.

CHAPTER 33

French Architectural Thought and the Idea of Greece

Christopher Drew Armstrong

Eighteenth- and Nineteenth-Century French Views on Greek Architecture

Since the seventeenth century, Greek architecture – as an ideal, a set of concepts, and an ever-expanding corpus of material remains – furnished French architects and theorists with an authoritative counter-model to the ruins of ancient Rome. Thinking about Greek architecture fueled debates, nourished controversies, and reshaped approaches to classicism in France at multiple significant points and in a number of key architectural projects, including Claude Perrault’s Louvre colonnade, Jacques-Germain Soufflot’s church of Sainte-Geneviève, Henri Labrouste’s bibliothèque Sainte-Geneviève, Charles Garnier’s Opéra, and Le Corbusier’s Villa Savoye. Though each of these projects derived its specificity from contemporary interests and developments – such as research into Gothic construction and the use of new materials like iron and reinforced concrete – reflections on Greek architecture link all these projects. Their diversity emphasizes both the dynamism of French classical theory and the endurance of core concerns about the expression of structure and the nature of aesthetic experience that grounded French architectural thought well into the twentieth century.

Despite France’s Latin heritage, its historical links with Italy, and the long-standing tradition of sending elite French artists to complete their education at the French Academy in Rome, Greece was always understood to have been the fountainhead of classical aesthetics. For a sequence of influential French thinkers, Greece signified liberty from dogma, while it served as a guide and as a reminder of timeless principles (Foucart 1982: 49). Even the theorist Eugène-Emmanuel Viollet-le-Duc (1814–1879), whose ideas derived substantially from investigations of medieval architecture, stated that “if we are Latins in our language, our policy, and our habits of life, we are somewhat Greek in the construction of our minds and our genius” (Viollet-le-Duc [1889] 1959: 63). As building needs shifted and construction technology changed, Greek principles provided a theoretical backbone as conceptions of architecture mutated in response to the demands and possibilities of an emergent modernity.

If any French theorist's name is synonymous with a dogmatic adherence to a reductive vision of Greek architecture, that individual is Antoine-Chrysostôme Quatremère de Quincy (1755–1849). What the Académie Française did for the French language and Napoleon did for the French legal system, Quatremère de Quincy sought to achieve in the realm of architecture. As the perpetual secretary of the Académie des Beaux-Arts from 1816 to 1839, Quatremère de Quincy was perfectly positioned to advance this agenda. For two key decades in the early nineteenth century, he oversaw the work produced by state-funded architect-*pensionnaires* who were mandated to produce studies of ancient monuments during their five years at the Académie de France in Rome. His authority was based on the production of a monumental dictionary of architecture published between 1788 and 1825, in which he defined architecture as the imitation of an ideal type, the only latitude for architects being to vary the character of the orders in their productions. That Greek architecture was *Architecture par excellence*, superior to all other systems, was clearly evident. The entry on “Grecque (architecture)” refers the reader to the definition of “Architecture,” stressing that the author felt no need for a separate entry on *Greek* architecture since virtually every entry in his dictionary was devoted to elaborating its precepts.

Quatremère de Quincy excelled in the art of the definition. Several of the theoretical entries in his dictionary are masterpieces of finely nuanced reasoning and hard-hitting polemic. He possessed complete and up-to-date knowledge of contemporary architectural research and had an understanding of complex German aesthetics. For Quatremère de Quincy, “Greek” was synonymous with “Classical,” signifying an architecture based on the orders and governed by a regular system of proportions. These elements were invented by the Greeks, but the concept of “Greek architecture” was atemporal and its aesthetic value transcended that of all other building traditions. A building was either Greek or not, and if Greek, more or less so. In this sense, Roman architecture was Greek, as was contemporary French architecture, though one may have been closer to the ideals of Greek architecture than the other. Quatremère de Quincy likened the orders to tones in a musical scale: the task of the architect was to compose using the vocabulary of forms and the grammar of relationships established by precedent rather than to invent wholly new forms or unorthodox combinations. Tampering with the rules for the sake of novelty inevitably resulted in uncoordinated and monstrous “assemblages” (Quatremère de Quincy 1788: 116, 385).

Quatremère de Quincy's ideas about Greek architecture drew inspiration from the work of the German theorist Johann Joachim Winckelmann (1717–1768) but were more fundamentally in accord with over a century of French writing. The same definition of Greek architecture, for example, occurs in Roland Fréart de Chambray's *Parallèle de l'architecture antique avec la moderne*

([1650] 1973) in which the Doric, Ionic, and Corinthian orders are defined as Greek, while the Tuscan and Composite are regarded as less worthy Roman inventions. Fréart de Chambray sought to capture the principles of the orders by paring away accretions added to the core vocabulary of Greek architectural forms. He went so far as to advocate that architects travel to Athens, in order to “accustom their eyes and to shape their imaginations based on the ideas of those excellent masters” (quoted by Quatremère de Quincy 1788: 155). In his influential *Essai sur l’architecture* of 1753, Marc-Antoine Laugier based his ideas about the orders on a similar understanding of Greek architecture, when he affirmed that “architecture owes all that is perfect to the Greeks” (1753: 3–4; [1755] 1977: 8).

The Rustic Hut

For French theorists, the ultimate referent for Greek architecture – the platonic idea or ur-form – was the rustic cabin (Rykwert 1972). This imaginary construct derived from Vitruvius’ discussion of early building practices and his description of the transposition of wooden construction techniques into stone that resulted in the distinctive features of the Doric order. The rustic cabin provided an abstract structural logic – vertical supporting members, horizontal spanning elements, triangular pitched roof – that captured the fundamental properties of the orders, stressing that the column and entablature were to be used as structural elements, not merely as applied decoration.

The rustic hut appears in François Blondel’s *Cours d’architecture* (1675), the textbook for generations of students of the Paris Académie Royale d’Architecture, in which the official doctrine of the orders was outlined in exhaustive detail. Stating that the perfection of classical architecture was based on the imitation of the “manner of building” of the Greeks, Blondel proposed that the first Greek buildings consisted of four tree trunks placed at the corners of a rectangle with horizontal spanning elements and a gabled roof above, the spaces between the uprights being filled with stone or other materials (1675: [chapter 1](#)). Blondel followed Vitruvius fairly closely in his belief that Greek architecture represented the transposition of wooden construction into stone and that the orders were refined over time with the accumulation of knowledge and skill.

Blondel’s idea that modern architects should imitate the wooden construction techniques of the Greeks provided a powerful image that became the centerpiece of French academic theory. Claude Perrault, who dismissed the notion embraced by Blondel that proportion was the source of beauty in architecture, nonetheless recommended that it was appropriate for modern architects to imitate “the first buildings that nature taught men to make” (Perrault 1683: ix). Building on these precedents, Laugier affirmed that all the

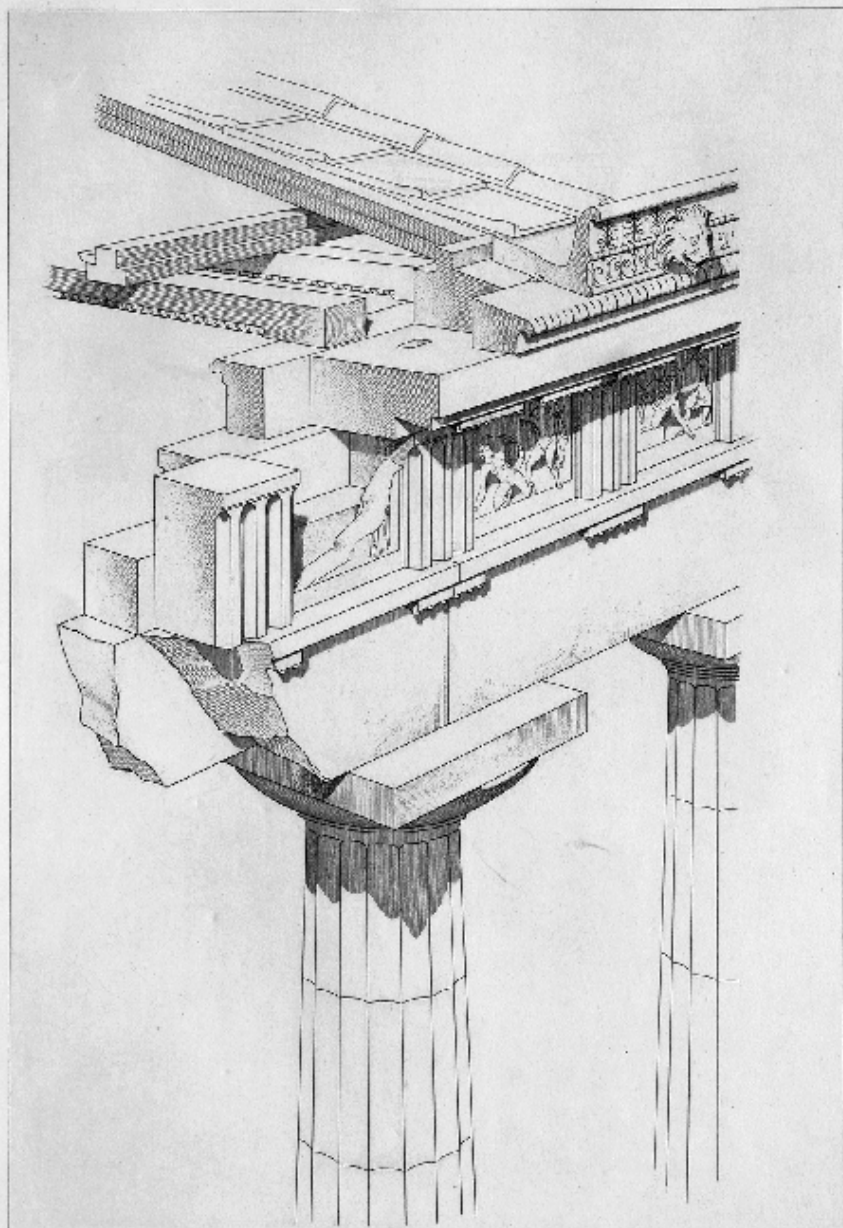
important principles of architecture were present in “the little rustic cabin,” emphasizing that the imitation of this building system was the source of beauty in art. An allegorical frontispiece added to the second edition of his book (1755) provided a graphic representation of the essential features of traebeated construction ([Figure 33.1](#)). The idea that the stone temple architecture of the Greeks derived from wooden construction techniques survived well into the nineteenth century, perpetuated by Quatremère de Quincy, who described the rustic cabin as the “type” for modern architects to imitate. In his definition of “Cabane,” Quatremère de Quincy transcribed a long section from Laugier’s *Essai sur l’architecture*, since he had little to add to the topic. According to both Laugier and Quatremère de Quincy, the challenge for modern architects was to adhere to the simplicity inherent in this early model.



Figure 33.1 Charles Eisen, “petite cabane rustique,” engraved by Jacques Aliamet.

Source: Laugier 1755: frontispiece.

In the context of French academic education, the rustic cabin was ultimately dismembered later in the nineteenth century by Viollet-le-Duc in his *Lectures on Architecture* (1863). In his second lecture, Viollet-le-Duc left no doubt that the Greeks were “the pioneers of Western Civilization” before demonstrating that every element of the Doric temple was the logical product of stone construction techniques (Figure 33.2). His statement that “the Greek temple is a stone construction, and not the imitation of a construction of wood” was an attack on almost two centuries of academic theory (Viollet-le-Duc [1889] 1959: 44; see also Chapter 3, in which Viollet-le-Duc’s claims have support from archaeological evidence). Describing the Greek builder as a “logician,” the Greek Doric temple, he claimed, followed a logic of construction directly connected to the properties of stone and the methods used for transporting blocks and hoisting them into place. Cylindrical column drums could be rolled to the building site more easily than rectangular blocks. The projecting corners of the square abacus allowed the capital to be lifted into place with ropes. The front and back projections of the abacus afforded space upon which temporary wooden beams were placed, spanning from capital to capital, where workmen stood as stone lintels were lowered into place. The method of assembling architraves from three thin slabs of stone set back to back derived from the fragility of marble and the propensity of long, unsupported stone spans to crack. The triglyph was a supporting element like a column, not the representation of the end of a wooden beam. Thus, the frieze composed of alternating supports and infill (metopes) expressed the structural logic of stone construction, reducing the load carried by the fragile architraves. The cornice was designed to shed rainwater and to protect the rest of the structure from weathering. Since the corner columns supported the most weight, the architect reduced the space between them and adjacent columns. The fundamental elements of the Greek temple thus revealed the processes of construction, or in Viollet-le-Duc’s words: “the architecture itself cedes to the means of execution” ([1889] 1959: 49).



A. Vaudouin, Rev. 1872

L. Chénier, 1872

DORIQUE

Le Plan des Colonnes Doriques, d'après les fouilles de la ville de Rome

Le Plan des Colonnes Doriques, d'après les fouilles de la ville de Rome

Figure 33.2 “Dorique.”

Source: Viollet-le-Duc, *Entretiens sur l'architecture*, pl. 2.

An unbridgeable chasm separated Viollet-le-Duc's vision of artistic production from that of Quatremère de Quincy and his precursors, for whom the making of architecture as a fine art practice, like painting and sculpture, resided in its capacity to imitate nature. The properties of trabeated construction became the conceptual type, and the rustic cabin served as the physical model that architects endeavored to imitate. The imitative arts – which sought to capture an immaterial ideal glimpsed through the productions of nature – transposed observed reality into physical objects (e.g., paintings, sculpture, buildings), distinct in their materiality from the originals. This transposition involved a kind of deceit regarded in classical theory as a source of pleasure enjoyed when contemplating works of art. Quatremère de Quincy had elaborated on the tension generated in the observer's mind between truth and fiction inherent in Greek architecture: imitations of the principles of wooden construction in stone buildings, he remarked, produced an “heureuse tromperie.” He described the imitative arts as “amiable, truthful liars” that “seduce” the observer rather than fooling him (Quatremère de Quincy 1788: 115).

Quatremère de Quincy's discussion of imitation as a kind of deceit was central to his definition of architecture. For some, the classical theory of imitation veered dangerously close to an outright lie. In his analysis of the Greek Doric temple, Viollet-le-Duc abandoned the fiction of the rustic cabin, concluding that every element of Greek building revealed “truthful construction” ([1889] 1959: 51; Pevsner 1969). Learning from Viollet-le-Duc and heightening his rhetoric, Le Corbusier in the 1920s famously declared that “we perish by lying,” a rebuke not only to contemporary architectural practice and education but also to centuries of classical theory (Le Corbusier 2007: 93). Lies were no longer tolerable; the truth, as Viollet-le-Duc had shown, was to be found in the great monuments of antiquity themselves, not in a dictionary. Experience, rather than abstract reasoning, supplied the lessons for architects.

Evidence from Greek Buildings

Though Viollet-le-Duc's understanding of Greek construction was based in part on his first-hand studies of the Greek temples at Paestum and Sicily, he stressed that he was an architect not an archaeologist. From the seventeenth century, a sense of the distinctive qualities of Greek architecture emerged in descriptions published by travelers who, following Pausanias, Plutarch, and Vitruvius, sought to identify physical remains that attest to the uniqueness of ancient Greek culture. On a voyage from Constantinople to Venice in 1641 a

certain Sieur Du Loir, for example, described Greece as the mother of the arts, despite the degradation of contemporary Greeks who lived in servitude under Ottoman rule. During his visit to Athens, Du Loir glimpsed the Parthenon from afar but described the Temple of Theseus (now called the Hephaisteion) in some detail and identified the relief sculpture in the metopes. Du Loir's account is cursory and left much to the imagination, but it strongly emphasized that despite the marginal position of Athens within modern Europe, its significance to the history of the West was without parallel.

An early instance of on-site study of Athenian monuments impacting French architectural thought appears in Claude Perrault's translation of Vitruvius, where he remarks that he obtained information about the temples of Athens from André de Monceaux (circa 1640–1671/1674), a traveler sent to the eastern Mediterranean in the 1660s by Louis XIV's chief minister, Jean-Baptiste Colbert, to collect manuscripts for the royal library (Middleton and Watkin 1987: 16, 66; Meynell 1993: 11–15). On the one hand, de Monceaux's observations provided evidence that some principles outlined in Vitruvius were followed in actual buildings. The Temple of Theseus, for example, demonstrated that it was possible for columns of the same order arranged around the exterior of the cella and in the pronaos to have different heights, something Vitruvius described, but that Perrault (1673: 118, n. 2) found utterly baffling. On the other hand, the Greek temples in Athens sometimes differed from Vitruvius's precepts. According to the Roman author, peripteral hexastyle temples ought to have 11 columns along their sides, whereas the Temple of Theseus had 13.

Among the lessons Perrault derived from these descriptions of Greek temples and the disparities he identified between precept and reality was the belief that the greatest ancient architects handled the orders with a degree of liberty that modern theorists would no longer countenance. He was delighted that one of Vitruvius' most significant sources, the Hellenistic architect Hermogenes, rather than being shackled by precedent, broke new ground by inventing a novel approach to column spacing with the pseudodipteral octastyle temple type. Perrault compared this ancient Greek innovation directly to his design for the Louvre colonnade, defending wide column spacing in his own and Hermogenes' work by asserting that "it is permitted to add something to the inventions of the ancients, as the ancients themselves did and who, like Hermogenes, were not criticized for changing something in architecture and for not having observed precisely all the precepts of those who preceded them" (Perrault 1673: 76, n. 3).

The most striking early initiative to document Athenian monuments occurred as part of a tour through sites around the eastern Mediterranean orchestrated by the French ambassador to Constantinople, Charles-Marie-François Olier, Marquis de Nointel (1635–1685). Accompanied by a retinue that included scholars and artists, Nointel visited Athens in November–December, 1674.

There, Jacques Carrey, a student of the French court painter Charles Lebrun, produced a remarkable set of drawings of the Parthenon metopes, frieze, and pediment sculpture. The Carrey drawings, now housed in the Bibliothèque nationale de France, are valued as exceptionally accurate representations attesting to the state of the Parthenon sculptures before the Venetian bombardment in 1687, but they were virtually unknown before the nineteenth century (Bowie and Thimme 1971).

The Carrey drawings were, however, seen by a number of seventeenth-century travelers who passed through Constantinople, notably the Lyonnais physician and antiquary Jacob Spon (1647–1685) and his traveling companion George Wheler (1650–1723), who explored Greece together in 1675–1676. Even before leaving France, Spon had a taste of what to expect during his voyage: in 1674, he published a description of Athens written two years before by a Jesuit priest named Jacques-Paul Babin (Constantine 1984: 15). In his detailed descriptions of the Temple of Theseus and the Parthenon, Babin indicated that exterior colonnades permitted the observer to walk fully around each building under cover. He also admired the quality of materials, construction, and sculptural embellishment of both temples. Writing of the Parthenon, Babin remarked, “Though this temple in Athens is made of magnificent materials, it is even more admirable for its construction and the artifice [sculptures] one can still see” (1674: 27). Inspired by these descriptions, Spon and Wheler mapped out the remains of ancient sites around Athens, assisted by local authorities and following Pausanias’ *Description of Greece*. Their published accounts are copiously illustrated with small, crude woodcuts that provide only the most general impressions of the sites they visited. Spon’s illustration of the Parthenon, however, found its way into Bernard de Montfaucon’s important 15-volume *L’Antiquité expliquée et représentée en figures* (1719–1724), while Wheler’s illustrations served as the basis for a plate representing ancient Greek sites in Johann Bernhard Fischer von Erlach’s *Entwurf Einer Historischen Architectur* (1721) (Figure 33.3).

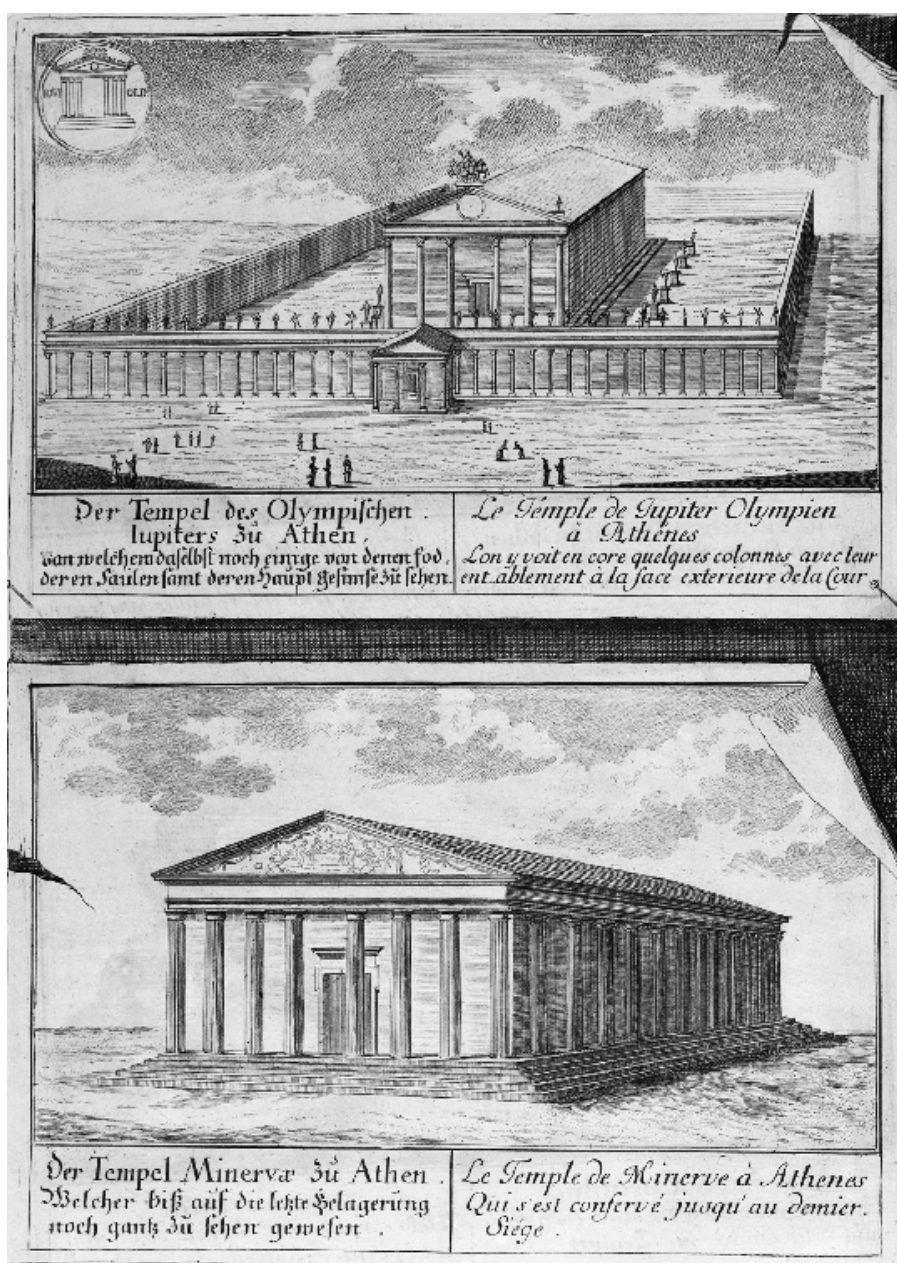


Figure 33.3 Greek monuments in Athens from George Wheler, including Olympieion and Parthenon of Athens.

Source: Fischer von Erlach 1721: pl. 19 (detail).

From Travel to Archaeology

The impact of Spon and Wheler's voyage to Greece was limited, being a private expedition unconnected to larger, ongoing scholarly projects or state institutions. Though de Monceaux and Nointel both traveled on behalf of the French crown, neither published the material gathered during their voyages, and de Monceaux's notes and drawings subsequently disappeared. In fact, Bernard de Montfaucon saw de Monceaux's drawings and refers to them in *L'Antiquité expliquée*. In eighteenth-century Britain, research into Greek sites and monuments would take a direction unparalleled in France with the creation of the Society of Dilettanti, a private association that brought together wealthy aristocratic patrons, scholars, and artists, who developed an ongoing project to study and document ancient sites in Greece and the Aegean over the course of more than a century. The two main publications produced with the backing of the Society of Dilettanti in the eighteenth and nineteenth centuries – *The Antiquities of Athens* (3 vols., 1762–1794) and *The Antiquities of Ionia* (5 vols., 1769–1915) – are testament to a new form of collaborative, scholarly research and publishing that laid the foundations for modern archaeology (Kelly 2009: xvi; see [chapter 34](#)).

The Antiquities of Athens was largely unknown in France before its publication in French between 1808 and 1822. Until that time, the main French publication documenting the ruins of ancient Greece was *Les Ruines des plus beaux monuments de la Grèce* (1758; 2nd ed. 1770) by Julien-David Le Roy (1724–1803). Le Roy's work is of the greatest significance: it provided the first serious attempt by an architect to analyze the compositional principles employed in ancient Greek monuments, meshing the French theoretical tradition inherited from the seventeenth century with contemporary empirical thought. A student of the Académie Royale d'Architecture from 1748 to 1750 and a *pensionnaire* at the Académie de France in Rome from 1751 to 1754, Le Roy fully understood the significance of Greece as a model for earlier French theorists. His book earned him a coveted place as a member of the Académie d'Architecture in 1758, and ultimately he became the last professor of architecture before the Academy was suppressed during the French Revolution (1774–1793).

Les Ruines des plus beaux monuments de la Grèce made major contributions to understanding the principles of the Greek orders and temple planning, clarified aspects of Vitruvius' treatise, and provided an outline of the history of ancient architecture. His book was referred to in numerous works by contemporary authors, including Stuart and Revett, Piranesi, and Winckelmann. In his dictionary of architecture, Quatremère de Quincy presented *Les Ruines* as the most authoritative guide to the monuments of ancient Athens and referred to Le Roy's ideas explicitly in a number of key entries, such as "Athens," "Cabane," and "Dorique." Inspired by Le Roy's teaching, his student Jean-Nicolas-Louis Durand (1760–1834) would have a lasting impact on architectural pedagogy in France as professor at the elite

École Polytechnique. Auguste Choisy (1841–1909) – a student of the École Polytechnique (1861) and professor at the École des Ponts et Chaussées (1876–1901) – never cites *Les Ruines* in either his important *Histoire de l'architecture* (1899) or his translation of Vitruvius (1909), though the imprint of the Le Roy's ideas is manifest at numerous points in his analysis of Greek monuments (Mandoul 2008: 47–49).

One of the key ideas demonstrated by Le Roy in his measured drawings of Greek monuments was that the Doric order changed over time, shifting from the heavy proportions observed in ruined temples at Thorikos, Corinth, and Delos, to the more refined proportions of the Temple of Theseus and the Parthenon in Athens. Some sense that Greek monuments could be ascribed to different periods already appears in seventeenth-century travel accounts: on his way to Patras, Du Loir passed through Corinth where he noted a group of 12 columns of the Temple of Apollo, and the heavy proportions and tight spacing of which led him to speculate that “they were made before the orders of architecture were invented” (*Les Voyages du Sieur Du Loir* 1654: 342). Like Du Loir, Spon stood in awe before the ruined temple at Corinth and described its massive Doric columns as earlier versions of the more refined orders found in Athens (Spon 1678: 296–297). In a presentation to the Academy of Lyon in 1752, Jacques-Germain Soufflot (1713–1780) remarked that the temples of Paestum represented the Doric order “in the cradle” and proposed writing a history illustrating the development (*progrès*) of the orders in antiquity (Ternois and Perez 1982: 213).

The notion that the forms and proportions of the orders could be used to date Greek architecture was controversial: Quatremère de Quincy for one rejected the idea. He nonetheless embraced the distinctive features of the baseless Greek Doric, believing its rediscovery added a missing “tone” to the scale of the orders (Quatremère de Quincy 1802: 255). In his definition of “Dorique,” Quatremère de Quincy used all Le Roy's examples, as well as evidence from Greek sites at Paestum and in Sicily, to show not only that the baseless Doric of the Greeks was the original form of the Doric order (later bastardized by the Romans and completely misunderstood by Renaissance authors), but also that the baseless Doric was *the order par excellence* and represented the very essence of Greek architecture. Choisy too regarded the baseless Doric as distinctively Greek while reaffirming Le Roy's thesis that “all Greek architecture reveals the date of its construction in its proportions” (Choisy 1899: 306). Though this idea was a commonplace by the late nineteenth century, Choisy reveals a more direct debt to Le Roy in his conclusion that the Tuscan order was a simplified version of the Doric and that the Tuscan temple type described by Vitruvius was merely a variant on Greek Doric temple planning (Choisy 1899: 379; 1909: 118, 122–123, 173–174). These questions were of particular importance in the context of mid-eighteenth-century debates about Roman dependence on Greek models, of which Le Roy's

analysis of Tuscan temple planning was a central component (Armstrong 2012: 95–97).

Conducted during travels to Greece in 1754–1755, shortly after the appearance of Laugier’s *Essai*, Le Roy’s research also provided new evidence for the wooden origins of Greek temple construction that would have far-reaching consequences for the interpretation of the history of Greek architecture. Prior to Le Roy’s publication, Babin had remarked that the stone spanning elements from the outer colonnades to the cella walls of both the Temple of Theseus and the Parthenon looked like wooden beams (Babin 1674: 19, 28). In *Les Ruines*, Le Roy represented the inverted ceiling plan of the Temple of Theseus, graphically demonstrating what Babin described and proving that the Greeks transposed forms from wooden construction into their stone buildings (Figure 33.4). Though he does not cite Le Roy, Quatremère de Quincy used the Temple of Theseus to demonstrate that in Greek construction “the elements are consistent with ancient wooden construction and the forms of carpentry” (1788: 113). This contention, however, was problematic, because the ceiling beams in the Temple of Theseus aligned with the cornice of the exterior entablature and not with the frieze, and thus they did not relate directly to the triglyphs. Viollet-le-Duc would later take this discrepancy as evidence that the triglyph did not represent the ends of wooden ceiling beams and thus did not imitate wood construction (Piranesi 1761: clv; Viollet-le-Duc [1889] 1959: 52).

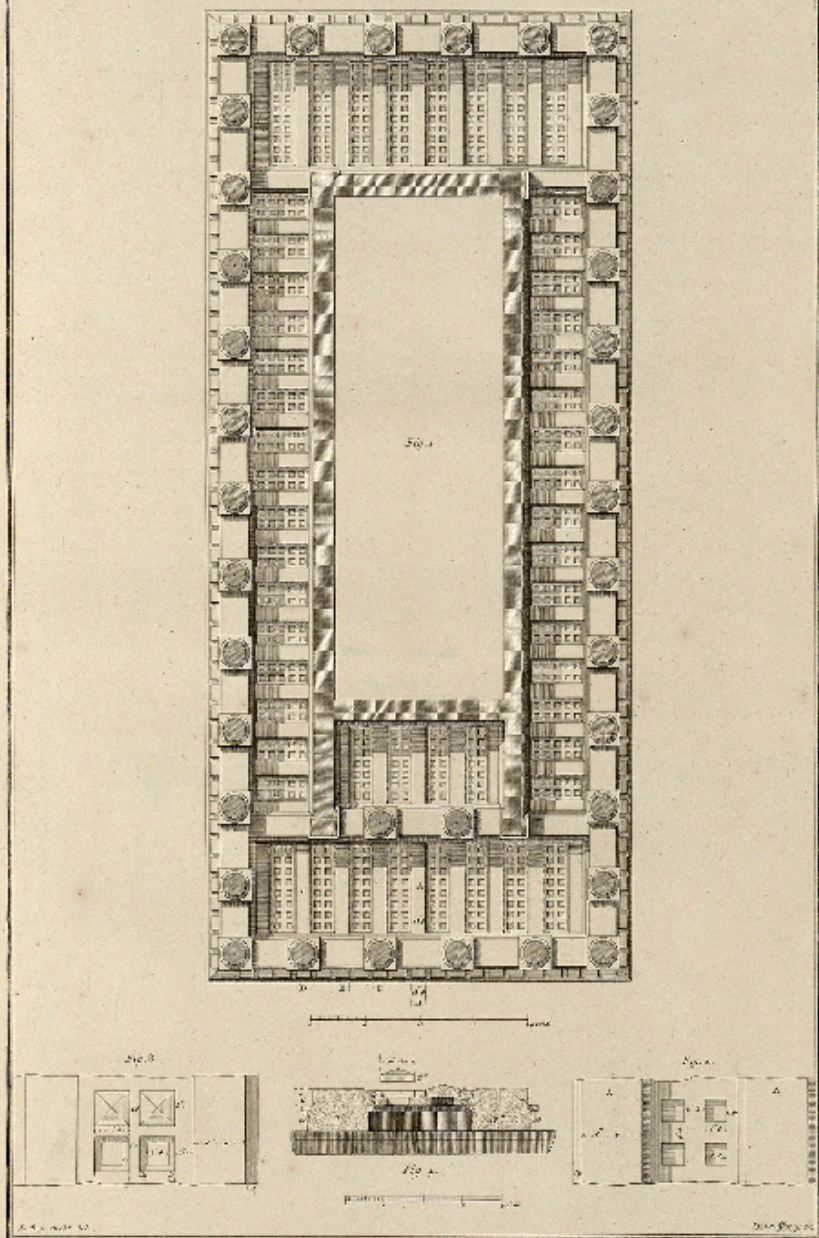


Figure 33.4 Julien-David Le Roy, ceiling plan of the Temple of Theseus (Hephaisteion), engraved by Jean-François de Neufforge.

Source: Le Roy 1758: part 2, pl. V.

Where Le Roy departed from all precedent was in his description of how the

original construction and planning of Greek temples evolved into the mature forms of Periclean architecture. Abandoning the rustic hut of Blondel and Laugier, Le Roy understood the original Greek temple to be a fully enclosed shed consisting of solid outer walls upon which a wooden roof structure rested. To prop up sagging roof beams, he imagined that early Greek builders inserted a row of vertical supports on the longitudinal axis inside the shed, and that this structural expedient was the origin of the colonnades that became so distinctive a feature of Greek architecture. The transposition of the row of vertical uprights to the *exterior* of the Greek temple occurred not for structural reasons but rather because of “the novelty of the spectacle produced by these columns, arranged at regular intervals in the interior of temples” (Le Roy 1758: 1.x–xi). For Choisy too, the key element in Greek architecture was the columnar portico (Choisy 1899: 297). In a subtle analysis of Greek building techniques based on his own first-hand investigations, Choisy concluded that the distinctive feature of Greek architecture was the colonnade of wooden posts supporting horizontal wooden lintels, a system imported by the Dorians into Greece and subsequently translated into stone building (1909: 61). Though their explanations of its origins differ, the colonnade (rather than the isolated column) was understood by both Le Roy and Choisy to be the main feature of Greek architecture (Choisy 1899: 297; Mandoul 2008: 182–183).

Le Roy based his speculation about the origin of the Greek colonnade on two archaic temples in which a central row of columns divided the cella in half longitudinally, namely the Temple of Hera I at Paestum, studied in 1750 by his colleague Soufflot, and a temple on the island of Aigina described (incorrectly) by Spon (Le Roy 1758: 1.x, n. b). Much confusion surrounded the temples at Paestum in the eighteenth century, especially the structure now designated as the Temple of Hera I, which features a row of columns down the center of the cella and odd number of columns (nine) across its short ends. Reluctant to see such unorthodox features as consistent with principles of religious architecture, the Temple of Hera I is called the “Basilica” in eighteenth-century publications, such as Thomas Major’s *Ruins of Paestum* (1768) and Claude-Mathieu Delagardette’s *Ruines de Paestum* (1799) (see also Lang 1950). Choisy continued to regard the Temple of Hera I as a civic structure rather than as a temple, finding an earlier precedent for its plan in an Ionic temple discovered in 1882 at Neandria, which he described as “a covered promenade” (1899: 247, 257).

In the 1758 edition of *Les Ruines*, Le Roy reinterpreted the origins of the Greek temple and was the first author to place the Temple of Hera I at Paestum into a chronological survey of ancient architectural history. Both Major and Delagardette credited Le Roy with having established a historical schema into which the temples at Paestum could be placed and a plausible explanation for the row of columns on the longitudinal axis of the Temple of

Hera I. Building on Major and Delagardette, Henri Labrouste (1801–1875) produced a study of Paestum based on research conducted in 1826–1828 as a *pensionnaire* at the French Academy in Rome (Figure 33.5). For nineteenth-century French architecture, Labrouste’s interpretation of the temples at Paestum marked a break with Quatremère de Quincy’s understanding of Greek architecture and was regarded by Viollet-le-Duc as heralding a “revolution” in academic thought (Saddy 1977; Levine 1977; Hellmann and Fraisse 1982a: 132–145; van Eck 2001; Bressani 2007: 88). Like Le Roy, Labrouste challenged the notion that every Greek building should be seen as a direct imitation of an unchanging ideal rather than as a step in a historical sequence. For Labrouste, the Temple of Hera I provided evidence that the Doric order mutated in response to cultural and environmental factors, producing a new species of architecture that he designated as “Posidonian” (Levine 1977: 367–368). Labrouste’s emphasis on the adaptability of Greek architecture became the hallmark of a distinctively French current in mid-nineteenth-century architectural thought designated by the term “néo-grec.” Seeking to evolve rather than to imitate, the “néo-grecs” embraced historical change and technological innovation as the basis for a new architecture adapted to the needs of the modern world.

PÆSTUM · PORTIQUE

VUE INTÉRIEURE RESTAURÉE

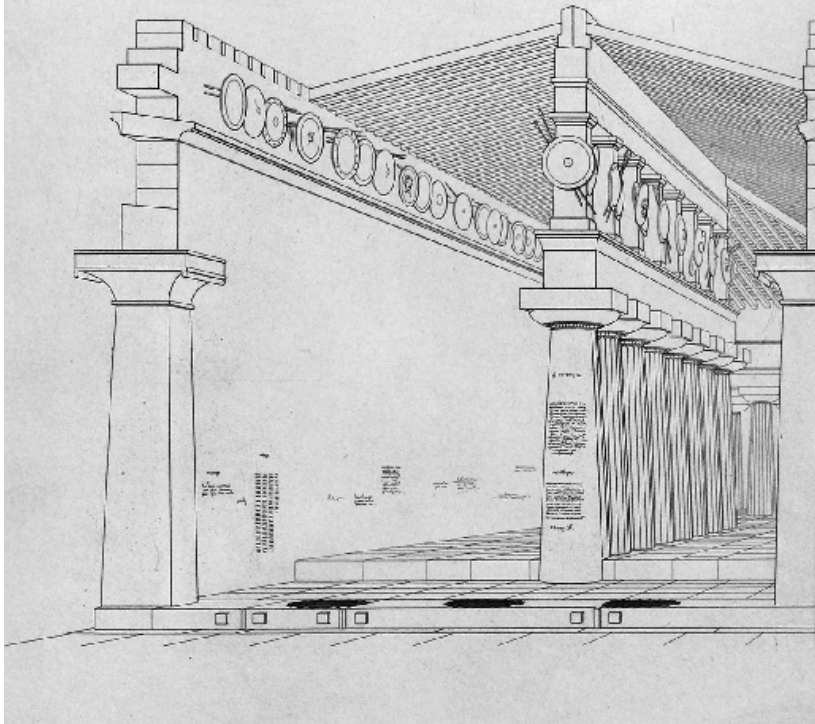


Figure 33.5 Henri Labrouste, view of the temple of Hera I at Paestum or the Basilica.

Source: Labrouste 1877.

Well before Labrouste's study, Quatremère de Quincy had already attacked the idea that the Doric at Paestum constituted a distinct order. In a long diatribe in his definition of "Dorique," he emphasized that the baseless Doric of antiquity was Greek and that all three temples at Paestum were as Doric in spirit and design as the temples of Periclean Athens. Every surviving example of the baseless Greek Doric – whether in Athens, Paestum, Sicily, or Asia Minor – reflected unambiguously the imitation of the original "type" of Greek architecture, the primitive wooden hut. Variations in details and proportions were of secondary significance within Quatremère de Quincy's theoretical framework. Exhibited in Paris from August to October 1829, Labrouste's work outraged Quatremère de Quincy who, as perpetual secretary of the Académie des Beaux-Arts, clamped down on subsequent research conducted

by the students at the French Academy in Rome: his views had a very long reach.

The Autonomy of Greece

Writing much of his dictionary during the period Le Roy dominated architectural education in Paris, Quatremère de Quincy acknowledged the significance of *Les Ruines des plus beaux monuments de la Grèce* while simultaneously disagreeing with many of Le Roy's ideas. Le Roy was fascinated by historical change and the visual experience of form, showing little interest in the concept of imitation and paying lip service to the academic obsession with codifying the details and proportions of the orders. Where Le Roy and Quatremère de Quincy could agree, however, was on the autonomy of Greek architecture: Le Roy unambiguously distinguished Greece from the "Orient" and minimized borrowings from Egyptian and Near Eastern sources. On this point, both Quatremère de Quincy and Viollet-le-Duc could also agree (see [chapter 3](#) for current archaeological thought on influences on Greek architecture).

The key term used by Le Roy and Quatremère de Quincy to distinguish between Greek and Egyptian architecture was "character," a concept borrowed from contemporary studies of natural history, which sought to distinguish species based on intrinsic, formal traits. According to both authors, the intrinsic character of Greek architecture was its masculinity (*caractère male*; Armstrong 2012: 159–161). Grappling with a more complex understanding of early migrations, Choisy attributed the distinctive character of Greek architecture to the Dorian invasion, then thought to have occurred in the tenth century BCE. Preferring "the severe beauty of line" over the seduction of ornament, the Dorians developed an architecture distinct in its "male" character from the Phoenician-influenced Mycenaean building tradition (Choisy 1899: 266). The rise of the Greek orders Choisy attributed to "an infusion of Dorian blood" that fundamentally transformed the column "type" already in use on mainland Greece and inherited from the Orient. Greek architecture thus represented a fusion of traditions, though Choisy left no doubt about the superiority of the one "race" over the other.

In addition to separating Greece from Near Eastern precursors, Le Roy's work helped to consolidate the opinion that the architecture of fifth-century BCE Athens represented a highpoint in the history of human achievement. *Les Ruines des plus beaux monuments de la Grèce* demonstrated what ancient authors, such as Pausanias and Plutarch, claimed when they praised the architecture of Athens produced under Pericles. Quatremère de Quincy in his dictionary entries on "Architecture" and "Athens" made numerous references to Le Roy's studies of the monuments of the Acropolis to emphasize that the

period of the “most grand and most beautiful style of architecture” followed the defeat of Xerxes, and that “the Doric structures built after this period, exude an air of heroism and masculine energy that resulted from the Greek’s superior political position” (Quatremère de Quincy 1788: 122). It was not only the Doric order of the Parthenon that demonstrated these qualities: so too did the Ionic of the Erechtheion, which Le Roy had shown to be the finest model of the order in antiquity, as well as a neat demonstration of the complicated principles of Ionic design outlined in Vitruvius (Armstrong 2012: 110–116). Choisy concurred, stating that the Ionic of the Erechtheion represented “the very type of the order in its complete perfection” (1899: 454).

Visual Experience of Form

Of all the monuments analyzed by Le Roy, none more fully captured his belief that “the arts were pushed to their highest degree of perfection” under Pericles than the Propylaia (Le Roy 1758: 2.11; [Figure 33.6](#)). Such too was Choisy’s opinion (1899: 479–481). Considering the state of the Propylaia at the time of Le Roy’s voyage, his interpretation of the building is remarkable. The beauty of the monument resided in the architect’s skillful handling of an awkward site and brilliant adaptation of the orders. Within groups of similar elements, nothing is quite equal, yet the overall impression is symmetrical. The Doric is used in two distinct scales on the western façade and flanking wings. The spacing of adjacent columns in the main portico changes in each bay. The order becomes Ionic inside the building and the columns are placed on pedestals (represented incorrectly in *The Antiquities of Athens*). Fragments of the Ionic entablature within the Propylaia showed that the dimensions of the inner and outer orders functioned independently of one another and that the height of the inner columns was proportioned according to the weight they were to support, not in relation to the height of the Doric architrave. Le Roy concluded that “all these things together must have produced a superb spectacle, worthy of the Athenians’ praise” (1758: 2.13; Armstrong 2012: 15–16, 116–118). Such an appreciation of Greek ingenuity in dealing with complex sites became a hallmark of subsequent French interpretations of Periclean architecture (Etlin 1994: 92).

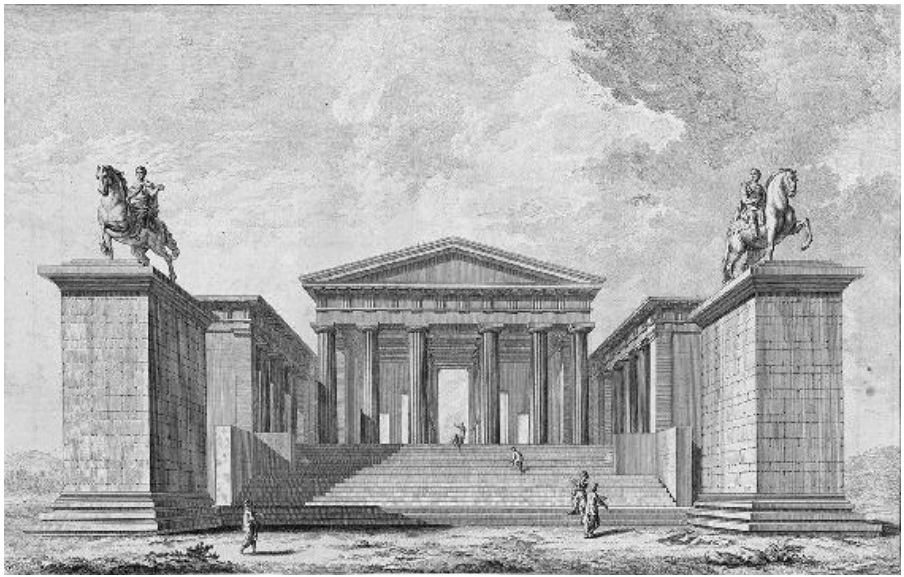


Figure 33.6 Julien-David Le Roy, perspective reconstruction of the Propylaea in Athens, engraved by Pierre Patte.

Source: Le Roy 1758: part 2, pl. XIII.

Quatremère de Quincy violently disagreed with Le Roy with respect to the visual impact made by architecture on the observer. For Quatremère de Quincy, Greek architecture was an intellectual experience: the contemplation of material reality was merely a vehicle that allowed the observer to enter a transcendent world of pure form. For Le Roy, the refinements of Greek temple architecture and the impact of its forms on the mind depended on sensory understanding. In Le Roy's analysis, the Parthenon was a masterpiece, because its forms were shaped to appeal to observers from varying distances. He claimed that "its components must be large and distinct, and the profiles made up of few parts, in order that their general aspect ... more strongly affect spectators who observe it" (Le Roy 1758: 2.9). It was the optical refinements and powerful visual effects produced by Greek architecture that Le Roy admired, rather than the underlying system of proportions.

In this regard, Viollet-le-Duc's understanding of Greek architecture resembles Le Roy's. If the overall features of the Greek temple followed from the logic of stone construction, the refinements and details of the orders revealed to Viollet-le-Duc that "art intervenes in its turn." Columns shaped as truncated cones obviate the illusion that cylindrical shafts appear to widen at the top; the curved echinus in the capital mediates between the square abacus and the circular column; fluting sharpens the definition of shadow on the column shaft; the fluting of the triglyphs repeats the vertical emphasis of the flutes of the columns. The repetition of line lends emphasis to form, much as the repetition of sounds more strongly impresses a musical idea on the ear. But

lest Viollet-le-Duc's lyrical analysis of shadow and line give the impression that any part of the Doric temple was the product of fantasy, he countered with the statement that "the Greek architect possesses the merits and the failings of the reasoner: he insists upon making it apparent to every eye that the various parts of the edifice have each a useful and necessary function" ([1889] 1959: 51). Such an emphasis on functionality is absent from both Le Roy and Choisy in their analysis of the experience of Greek buildings.

Polychromy

Viollet-le-Duc noted that, in addition to manipulating the effects of light and shadow, Greek architects embellished their white marble architecture with color in order to provide definition where shadows rendered forms weak and difficult to discern. At the junction of the capital and column shaft, lines were painted to heighten contrasts; the sculpted reliefs of the metopes were enlivened with color, and the exterior surfaces of the cella walls were painted dark red or brown to make the columns stand out more clearly in the intense Mediterranean sun (Viollet-le-Duc [1889] 1959: 55). Viollet-le-Duc's relatively conservative references to painted decoration hint at debates around polychromy that animated French architects throughout the nineteenth century. By the time Viollet-le-Duc wrote his lectures, extensive painted decoration was routinely incorporated in reconstructions of Greek monuments produced by graduates of the École des Beaux-Arts who worked on excavations at ancient Greek sites after the creation of the École française d'Athènes in 1846 (Middleton 1976; Hellmann and Fraise 1982b; Van Zanten 1994; see [chapter 12](#)).

Though Stuart and Revett found evidence of painted decoration in the course of their research, real interest in ancient polychromy emerged only in the early nineteenth century after discoveries made at Aigina and Sicily by German and British scholars. Quatremère de Quincy began to explore ancient polychromy as early as 1806, and later published a book on the use of colored materials in Greek sculpture – his important *Jupiter Olympien ou l'art de la sculpture antique considéré sous un nouveau point de vue; ouvrage qui comprend un essai sur le goût de la sculpture polychrome* (1815) (Middleton 1982b: 176). He did not, however, embrace the notion that Greek temples were covered with painted decoration, criticizing Labrousse for the addition of graffiti and other accretions to his reconstructions of the temples at Paestum.

Mounting evidence of extensive polychromy in ancient architecture became difficult to ignore and impossible to deny by the time Labrousse's work was exhibited in Paris. In 1822, colorful renderings of ancient Egyptian monuments were shown at the Salon, the work of Franz Christian Gau (1790–1854), who studied at the École des Beaux-Arts before traveling through Italy,

Sicily, Egypt, and Nubia from 1815–1819. The main French protagonist in the rediscovery of Greek architectural polychrome was Jacques-Ignace Hittorff (1792–1867), also a student of the École des Beaux-Arts, who traveled independently to Sicily in 1823–1824. Working with Karl Ludwig Wilhelm von Zanth (1796–1857), Hittorff employed 19 workmen to assist with excavations, but his vision of colorful Greek temples embellished with complex painted motifs derived from cobbling together an array of sources from different locales and periods, including details found as far afield as Aigina, Rhamnous, Catania, and Jerusalem, from Etruscan tomb paintings at Tarquinia, and Roman mural decorations discovered at Herculaneum and Pompeii (Van Zanten 1982: 206). Even before completing his excavations in Sicily, Hittorff sent a description of his ideas to be published in the Weimar-based *Kunstblatt*; these subsequently found their way into the lectures of Désiré Raoul Rochette (1790–1854), professor of archaeology at the Bibliothèque du Roi in Paris (Middleton 1982b: 185). Though Raoul Rochette was to become Hittorff's most vociferous critic, the debate centered on the extent of polychromy in ancient Greek architecture since its use could no longer be questioned.

Hittorff ultimately presented his findings to the Académie des Beaux-Arts and the Académie des Inscriptions in 1830, exhibited his renderings at the Salon of 1831, and published his *Restitution du temple d'Empédocle à Sélinonte, ou l'architecture polychrome chez les Grecs* in 1851 (Van Zanten 1982: 197–215; 1994). His labors were rewarded in 1853 by a coveted seat in the Académie des Beaux-Arts, which Labrousse came to occupy after Hittorff's death in 1867. Though Hittorff's method was completely unscientific and his proposals outlandish, his general thesis was corroborated by the work of Guillaume-Abel Blouet (1795–1853), another student of the École des Beaux-Arts and the French Academy in Rome (at the same time as Labrousse), who was sent in 1829 by the Académie des Beaux-Arts as part of the French expedition to document the Peloponnesos toward the end of the Greek War of Independence (Doulat 2003). The academician Jean-Nicolas Huyot (1780–1840), who visited Greece in 1820–1821, drafted the instructions for Blouet's mission, specifying that he should search for remnants of color on Greek monuments. The published *Expédition scientifique de Morée* appeared in three volumes between 1831 and 1838 and included a colorful reconstruction of the Temple of Zeus at Olympia, the Temple of Apollo Epikourios at Bassai, and the Temple of Aphaia at Aigina (identified then as the Temple of Panhellenic Zeus).

Steeped in the preceding debates and heir to the mantle of the *néo-grecs*, Charles Garnier (1825–1898) studied at the École des Beaux-Arts from 1842 to 1848 and seized on Hittorff's 1851 publication on Greek polychromy while he was a *pensionnaire* at the French Academy in Rome (see Foucart 1982). He consequently decided to study the Temple of Aphaia at Aigina for his

fourth-year *envoi* in 1852. Since arriving in Rome in 1848, Garnier had spent considerable time traveling throughout Italy, visiting the Roman sites at Herculaneum and Pompeii, the Greek temples at Paestum and Sicily, and the Etruscan tombs at Cerveteri and Tarquinia. Studying ancient examples of painted decoration appears to have been a primary goal. Prior to leaving for Greece, Garnier read Pausanias and Blouet, whose *Expédition scientifique* he used as a guide on the ground. Based on 21 days of on-site study at Aigina, his restoration of the Temple of Aphaia relied heavily on his prior experiences with colored decoration at ancient sites in Italy; it was reviewed in Paris by Hittorff and Raoul Rochette, both of whom expressed reservations about Garnier's method (Mead 1991: 218).

Two chromolithographs of Garnier's reconstruction of the Temple of Aphaia nevertheless appeared in the pages of the *Revue générale de l'architecture et des travaux publics*, illustrating a sequence of articles by the classical scholar Charles-Ernest Beulé (1826–1874), who succeeded Raoul Rochette as professor of archaeology at the Bibliothèque Impériale in 1854 (Figure 33.7). In 1852 Garnier met Beulé in Athens, where the latter was based at the École française and was responsible for excavations that revealed the steps leading from the base of the Acropolis to the Propylaia. In his articles on Greek architecture, Beulé enthusiastically acknowledged the contributions of Hittorff to revealing the entire "system" of Greek polychrome. For Beulé, the problem of his own generation was to establish a history of polychrome that would parallel the "théorie des époques," which he took for granted as the principle for understanding the transformation of the proportions and details of the orders over time (*Revue générale de l'architecture* 1858: 201). He imagined that just as capitals and columns became more refined from the sixth to the fifth century BCE, so too the application of polychromy became more subtle, covering less of the building surface.



Figure 33.7 Charles Garnier, reconstruction of the “Temple de Jupiter Panhellenien, île d’Egine, Grèce,” lithograph by Adolphe Levie.

Source: Garnier 1858: pl. 24.

Beulé thus reconciled the different factions in the debate over polychromy by suggesting that the more or less extreme use of paint on ancient Greek temples could be ascribed to different historical periods in the development of Greek architecture. He urged his readers to have the “courage” to embrace the notion that the Greeks had a different aesthetic and to “see their temples glowing with color” (*Revue générale de l’architecture* 1858: 210). A modern eye might admire the beauty of exposed white marble, but for the Greeks paint was necessary to mitigate the glare produced by the intense

Mediterranean sun. Though Beulé was critical of some details in Garnier's reconstruction of the Temple at Aigina, he admired the young architect's work and regarded the building as a significant precursor to the monuments of Periclean Athens.

Motion in Architecture

The possibility that Greek architects composed in response to the embodied experience of the moving observer is hinted at in Babin's description of walking between the cella and portico of the Parthenon. Viollet-le-Duc too noted that the porticoes around the cella of the Greek temples were placed at a sufficient distance to permit "perambulation" ([1889] 1959: 54). He was also sensitive to the "picturesque" composition of the Erechtheion, which capitalized on the irregularity of the site and demonstrated the Greek's emancipation from the rules of symmetry. These and many other observations by nineteenth-century scholars served as the basis for Choisy's reinterpretation of Greek architecture in his *Histoire de l'architecture* (1899). What is clear from the preceding analysis, however, is that the principal precursor for Choisy's understanding of both the transformation of Greek architecture over time and the observer's experience was Le Roy, whose *Les Ruines des plus beaux monuments de la Grèce* must have contributed to his thinking.

Numerous authors have stressed that Choisy's contribution to understanding the Acropolis and Greek architecture in general was his application of the concept of the "picturesque" to understanding both Greek compositional principles and the viewing experience implied by the planning of Greek sites (Middleton 1981; Lucan 1985; Etlin 1994: 76; Mandoul 2008: 13–15, 74). This concept is normally taken back to the early nineteenth century but its application to the observer's experience of architectural form can be found in Le Roy's description of the "pittoresque" experience of walking adjacent to and within Perrault's Louvre colonnade (1764: 62; 1770: 2.viii). Choisy also conceived of the various views offered to the observer as he moved around the Acropolis in Athens as a "series of *tableaux*" (1899: 419), an idea similarly found in Le Roy's discussion of the experience of an observer's motion in relation to architecture (1764: 55; 1770: 2.vi; Armstrong 2012: 189–193).

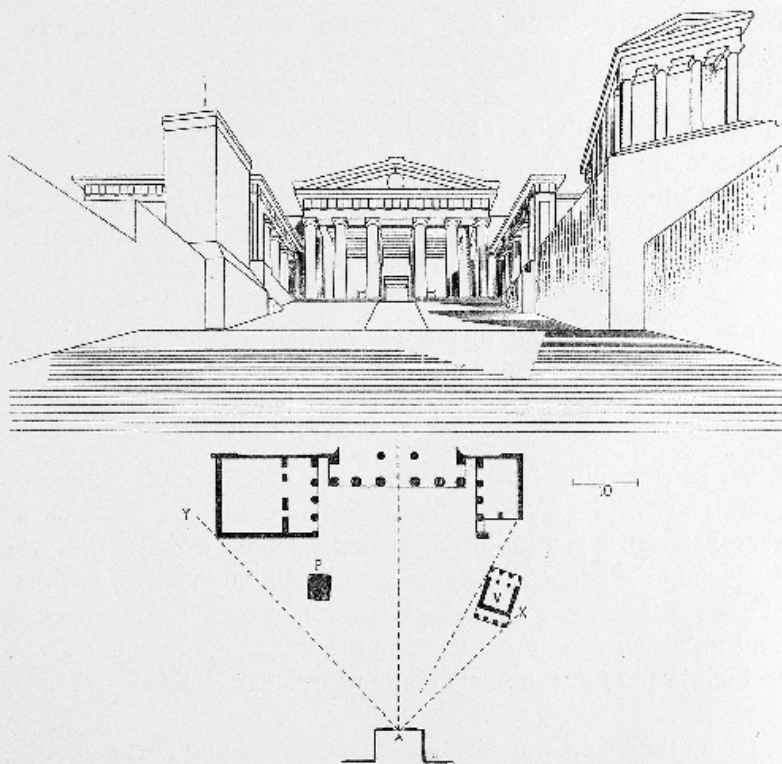
Writing over a century after Le Roy, Choisy's ideas about Greek architecture and planning added significant nuance and developed a far more complex understanding of subtle compositional devices such as optical refinements, axes of movement, and sequences of views. Le Roy and Choisy are most closely linked, however, by their overarching objectives in studying Greek architecture: both were attempting to formulate principles of design for *contemporary* practice based on an analysis of a wide array of historical

sources (Etlin 1994: 105). For both, the architecture of Periclean Athens represented a high point, but it was not their exclusive referent as they sought fundamental principles. Their emphasis on the colonnade (rather than the primitive hut) as a key formal device transcends their analysis of Greek architecture, since the same design motif was found in Egyptian temples and Gothic cathedrals.

Following the work of British empiricists such as Edmund Burke, Le Roy described moving in relation to a colonnade as an exceptionally powerful visual experience. Choisy observed that the colonnade was the principal motif in most Greek religious and civic architecture and generalized the experience of architectural form to consider not merely the motion of the observer in relation to columns but in relation to buildings in a landscape. His most powerful and enduring lesson from Greek architecture was his presentation of the Athenian Acropolis as a series of four carefully orchestrated “tableaux” calculated to show each monument (Propylaia, Erechtheion, Parthenon) to the greatest possible effect ([Figure 33.8](#)).

de l'aile de gauche : si bien que, pour un spectateur placé au pied de l'escalier, les deux rayons limites AX et AY s'inclinent également sur l'axe général de l'édifice.

1



Si l'architecte a tronqué l'aile droite, ce fut pour respecter l'enceinte de la Victoire aptère et permettre au temple V de

Figure 33.8 Auguste Choisy, “Le Tableau des Propylées.”

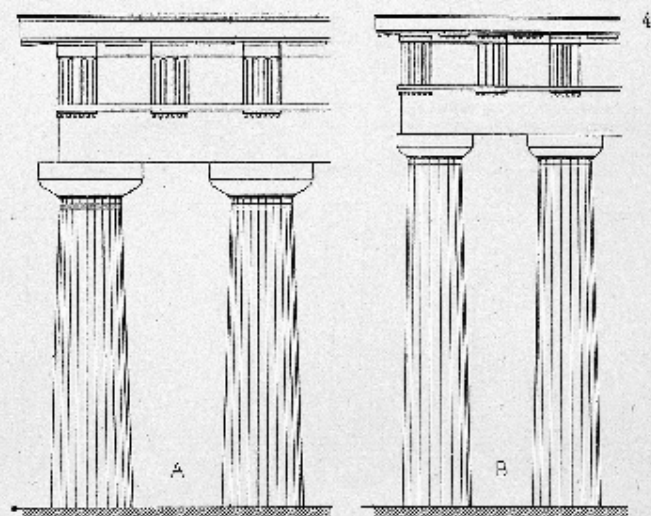
Source: Choisy 1899: 414.

Conclusions

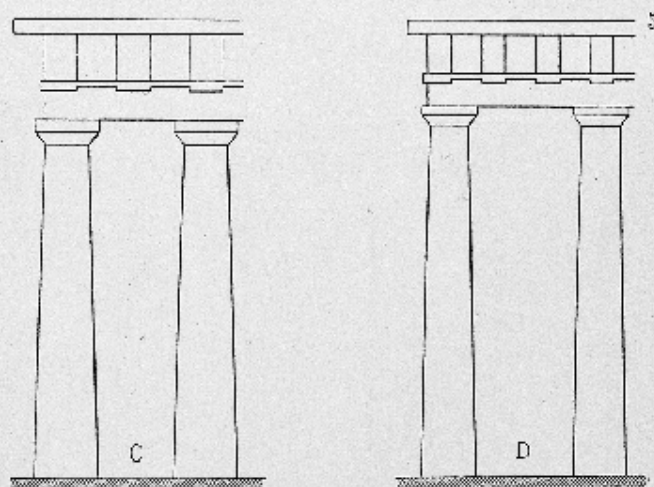
Le Corbusier made no secret of his debt to the tradition of French theory outlined above. In many respects, his ideas about architectural composition restated that tradition (Le Corbusier 2007: 115, 121, 222; Foucart 1982: 60). He adhered, for example, to the classical notion that proportion or “regulating lines” produced beauty in architecture, using illustrations of Blondel’s *Porte Saint-Denis* (1672) and Ange-Jacques Gabriel’s *Petit Trianon* (1762–1769) to make his points (Le Corbusier 2007: 131, 141; Passanti 2002: 77–78). Similarly, Le Corbusier’s famous discussion of Greek architecture as the

perfection of a standard and his juxtaposition of the Temple of Hera I at Paestum with the Parthenon in *Vers un architecture* (1923) represented commonplace ideas about the progressive refinement of the Greek orders reaching back to *Les Ruines des plus beaux monuments de la Grèce*. Le Corbusier did not need to know Le Roy's work directly: Choisy illustrated the transformation of the Doric order in his *Histoire de l'architecture*, one of the prime sources for Le Corbusier's ideas (Figure 33.9).

Et si l'on dépasse le 5^e siècle pour traverser la période macédonienne et descendre jusqu'à la domination romaine, on voit



la tendance à la légèreté s'exagérer au point de donner les



proportions fig. 5 (C, Métroon d'Olympie; D, Minerve Poliade de Pergame).

Figure 33.9 Auguste Choisy, comparison of Doric orders from (A) Paestum, (B) the Parthenon (C) Olympia, (D) Pergamon.

Source: Choisy 1899: 307.

The lessons derived by Le Corbusier from his experiences on the Acropolis and from the deep tradition of French architectural theory were not those of the archaeologist or the historian but rather those of the traveler (von Moos 2007: 24). Like Choisy and Le Roy before him, Le Corbusier used motion in landscape and architecture to link discrete experiences into narrative. The concept of the “*promenade architecturale*,” articulated by Le Corbusier in descriptions of his work in the 1930s, takes Choisy’s analysis of the spectator’s motion through the Propylaia and on the Acropolis into the interiors of his Villa La Roche in Paris. There, moving through the carefully choreographed sequence of spaces, “the architectural spectacle unfolds in succession before your eyes” (von Moos 2002: 24, 41). Instructing his readers to observe the effects of displacement, Le Corbusier takes us on a pedagogical journey, one with deep roots in Greek thought and Enlightenment theory.

FURTHER READING

Interest in French architectural history of the eighteenth and nineteenth centuries has grown recently. On Le Roy, see Armstrong 2012, on Quatremère de Quincy, Ruprecht 2014. For a new synthesis of the life and works of Winckelmann, especially in his so-called invention of antiquity, see Harloe 2013. On the work of Labrouste and his restoration of the temples at Paestum, see Bélier, Bergdoll and Le Cœur 2012. A number of translations of French and German architectural treatises have been produced by the Getty Foundation, including Le Roy (2004), Winckelman (2006; Mattusch 2011), Quatremère de Quincy (2012); see also Younés 1999. On the impact of Greece on modern architectural thought, see Foucart 1982, Étienne and Étienne 1992, Tournikiotis 1994, and Etlin 2005.

REFERENCES

Armstrong, C.D. 2012. *Julien-David Leroy and the Making of Architectural History*. London.

Babin, J.-P. 1674. *Relation de l'estat present de la ville d'Athenes, ancienne capitale de la Grece, bâtie depuis 3400 ans avec un abrégé de son histoire et de ses antiquités*. Lyon.

Bélier, C., B. Bergdoll, and M. Le Cœur, eds. 2012. *Henri Labrouste: Structure Brought to Light*. New York.

Blondel, F. 1675. *Cours d'architecture*. Paris.

Börsch-Supan, E., ed. 1976. *Gottfried Semper und die Mitte des 19. Jahrhunderts*. Basel.

Bowie, T. and D. Thimme, eds. 1971. *The Carrey Drawings of the Parthenon Sculptures*. Bloomington.

Bressani, M. 2007. "The Hybrid: Labrouste's Paestum." *Chora*, 5: 81–126.

Choisy, A. 1899. *Histoire de l'architecture*. Vol. 1. Paris.

Choisy, A. 1909. *Vitruve*. Paris.

Constantine, D. 1984. *Early Greek Travellers and the Hellenic Ideal*. Cambridge.

Delagardette, C.-M. 1799. *Les Ruines de Paestum ou Posidonia, ancienne ville de la Grande Grèce*. Paris.

Doulat, F. 2003. "Guillaume Abel Blouet, du village de Passy aux côtes de Morée, exemplarité ou exception du parcours intellectuel et artistique d'un enfant du peuple." *Livraisons d'histoire de l'architecture*, 5: 67–83.

Drexler, A., ed. 1977. *The Architecture of the École des Beaux-Arts*. New York.

Du Loir. 1654. *Les Voyages du Sieur Du Loir, Contenus en plusieurs lettres écrites du Levant ...* Paris.

Etienne, R. and F. Etienne. 1992. *The Search for Ancient Greece*. New York.

Etlin, R.A. 1994. *Frank Lloyd Wright and Le Corbusier: The Romantic Legacy*. Manchester.

Etlin, R.A. 2005. "The Parthenon in the Modern Era." In Neils, ed., 363–395.

Fischer von Erlach, J.B. 1721. *Entwurf Einer Historischen Architectur*. Vienna.

Foucart, B. 1982. "La Modernité des néo-grecs." In Hellmann and Fraisse, eds., 49–60.

Fréart de Chambray, R. [1650] 1973. *Parallele de l'architecture antique et de la moderne*. Paris.

Garnier, H. 1858. *Revue générale de l'architecture et des travaux publics* 16: pls. 24–25.

Harloe, K. 2013. *Wickelmann and the Invention of Antiquity: History and Aesthetics in the Age of Altertumswissenschaft*. Oxford.

Hellmann, M.-C. and P. Fraisse, eds. 1982a *Paris–Rome–Athènes: Le voyage en Grèce des architectes français aux XIXe et XXe siècles*. Paris.

Hellmann, M.-C. and P. Fraisse. 1982b. “Architecture grecque et Envois de Rome: historique et tendances.” In Hellmann and Fraisse, eds., 25–38.

Kelly, J.M. 2009. *The Society of Dilettanti: Archaeology and Identity in the British Enlightenment*. New Haven.

Labrousse, H. 1877. *Temples de Paestum*. Paris.

Lang, S. 1950. “The Early Publications of the Temples at Paestum.” *Journal of the Warburg and Courtauld Institutes*, 13: 48–64.

Laugier, M.-A. 1753. *Essai sur l'architecture*. Paris.

Laugier, M.-A. [1755] 1977. *Essai sur l'architecture*. 2nd ed. Paris.

Le Corbusier [Charles-Édouard Jeanneret]. 2007. *Toward an Architecture*. Translated by J. Goodman. Los Angeles.

Le Roy, J.-D. 1758. *Les Ruines des plus beaux monuments de la Grèce*. Paris.

Le Roy, J.-D. 1764. *Histoire de la disposition et des formes différentes que les Chrétiens ont données à leurs Temples, depuis le Règne de Constantin le Grand, jusqu'à nous*. Paris.

Le Roy, J.-D. 1770. *Les Ruines des plus beaux monuments de la Grèce*. 2nd ed. Paris.

Le Roy, J.-D. 2004. *The Ruins of the Most Beautiful Monuments of Greece*. Translated by D. Britt. Los Angeles.

Levine, N. 1977. “The Romantic Idea of Architectural Legibility: Henri Labrousse and the Neo-Grec.” In Drexler, ed., 357–393.

Lucan, J. 1985. “Die Propyläen der Akropolis von Athen: ein architektonisches Rätsel.” *Daidalos*, 15: 42–56.

Major, Thomas. 1768. *The Ruins of Paestum, otherwise Posidonia, in Magna Graecia*. London.

Mandoul, T. 2008. *Entre raison et utopie. L'Histoire de l'architecture d'Auguste Choisy* Wavre.

Mattusch, C.C., ed. 2011. *Johann Joachim Winckelmann: Letter and Report on the Discoveries at Herculaneum*. Los Angeles.

Mead, C.C. 1991. *Charles Garnier's Paris Opera: Architectural Empathy and the Renaissance of French Classicism*. New York.

Meynell, G. 1993. "André de Monceau, F.R.S. 1670." *Notes and Records of the Royal Society of London*, 47 (1): 11–15.

Middleton, R. 1976. "Viollet-le-Duc's Academic Ventures and the *Entretiens sur l'architecture*." In Börsch-Supan, ed., 239–254.

Middleton, R. 1981. "Auguste Choisy, Historian: 1841–1909." *International Architect*, 5: 37–42.

Middleton, R., ed. 1982a. *The Beaux-Arts and Nineteenth-Century French Architecture*. Cambridge, MA.

Middleton, R. 1982b. "Hittorff's Polychrome Campaign." In Middleton, ed., 174–197.

Middleton, R. and D. Watkin. 1987. *Neoclassical and 19th-Century Architecture. Vol. 1: The Enlightenment in France and England*. New York.

Montfaucon, B., de. 1719–1724. *L'Antiquité expliquée et représentée en figures*. Paris.

Moos, S., von and A. Rüegg, eds. 2002. *Le Corbusier before Le Corbusier: Applied Arts, Architecture, Painting, Photography, 1907–1922*. New Haven.

Neils, J., ed. 2005. *The Parthenon: From Antiquity to the Present*. Cambridge.

Passanti, F. 2002. "Architecture: Proportion, Classicism and Other Issues." In von Moos and Rüegg, eds., 69–98.

Perrault, C. 1673. *Les Dix livres d'architecture de Vitruve*. Paris.

Perrault, C. 1683. *Ordonnance des cinq espèces de colonnes selon la méthode des anciens*. Paris.

Pevsner, N. 1969. *Ruskin and Viollet-le-Duc: Englishness and Frenchness in the Appreciation of Gothic Architecture*. London.

Piranesi, G.B. 1761. *Della magnificenza ed architettura de' romani*. Rome.

Quatremère de Quincy, A.-C. 1788. *Encyclopédie méthodique, Architecture*. Vol. 1. Paris.

Quatremère de Quincy, A.-C. 1802. *Encyclopédie méthodique,*

Architecture. Vol. 2. Paris.

Quatremère de Quincy, A.-C. 2012. *Letters to Miranda and Canova on the Abduction of Antiquities from Rome and Athens*. Los Angeles.

Ruprecht, L.A. 2014. *Classics at the Dawn of the Museum Era: The Life and Times of Antoine Chrysostome Quatremère de Quincy (1755–1849)*. New York.

Rykwert, J. 1972. *On Adam's House in Paradise: The Idea of the Primitive Hut in Architectural History*. New York.

Saddy, P. 1977. *Henri Labrouste, Architect 1801–1875*. Paris.

Spon, J. 1678. *Voyage d'Italie, de Dalmatie, de Grece, et du Levant*. Vol. 2. Lyon.

Ternois, D. and M.F. Perez, eds. 1982. *L'Oeuvre de Soufflot à Lyon*. Lyon.

Tournikiotis, P., ed. 1994. *The Parthenon and Its Impact in Modern Times*. Athens.

van Eck, C. 2001. "What was Revolutionary about the Romantic Pensionnaires: The Role of Biology in the Work of Labrouste, Vaudoyer and Reynaud." In *L'Architecture, les sciences et la culture de l'histoire au XIXe siècle*. Saint-Étienne: 83–98.

Van Zanten, D. 1982. "Architectural Polychromy: Life in Architecture." In Middleton, ed., 196–215.

Van Zanten, D. 1994. "The Parthenon Imagined Painted," In Tournikiotis, ed., 258–277.

Viollet-le-Duc, E. [1889] 1959. *Lectures on Architecture*. Vol. 1. Translated by B. Bucknall. Boston.

von Moos, S. 2002. "Voyages en Zigzag." In von Moos and Rüegg, eds., 23–44.

von Moos, S. and A. Rüegg, eds. 2002. *Le Corbusier before Le Corbusier: Applied Arts, Architecture, Painting, Photography, 1907–1922*. New Haven.

von Moos, S. and A. Rüegg, eds. 2007. *Le Corbusier: The Art of Architecture*. Weil am Rhen.

Winckelmann, J. 2006. *History of the Art of Antiquity*. Translated by H.F. Mallgrave. Los Angeles.

Younés, S., ed. and trans. 1999. *The True, the Fictive, and the Real: The Historical Dictionary of Architecture of Quatremère de Quincy*. London.

CHAPTER 34

The Reception of Greek Architecture in Eighteenth-Century Britain

Jason M. Kelly

Introduction

With the excavation of Herculaneum in the 1730s, artists and travelers were encouraged to look for new examples of monumental classical antiquities, and by the 1750s, they fanned across the Mediterranean searching for Greek works. The publications that followed immediately influenced architectural practice throughout Europe. At first, British architects designed fanciful buildings and rooms, merging motifs from ancient Greek architecture with Roman and Palladian forms. Interest in new designs drove archaeological investigation, and new findings influenced design: architecture and archaeology were mutually constituted in eighteenth-century scholarship and design practice.

As artists, architects, and antiquaries traveled more widely in the Mediterranean – and as it became imperative for new architects to study publications on Greek architecture in order to please their patrons' tastes – classical styles became more historicized. By the early decades of the nineteenth century, new generations of British architects had adopted a more formalized and rigid classicism with designs that more closely followed archaeological prototypes. Impelled by ardent defenders of the Greek style such as Thomas Hope, influential Greek-styled public buildings were commissioned, notably the west façade of Downing College (1807–1813) and the British Museum (1823–1852). “Grecian” romanticism, encouraged by the plight of the Greeks in their war of independence, and the high-profile importation of the Parthenon marbles by Lord Elgin after 1801, encouraged the Greek Revival, a movement that peaked from the 1810s through the 1830s. The Greek style in building became too didactic for some critics, and attacks by Pugin and Ruskin during the 1830s ushered in the decline (but not the end) of the Greek Revival style and the ascension of Victorian Gothic. Whereas classicism framed architectural aesthetics and design during the eighteenth and early nineteenth centuries and drove interest in Greek material culture, by the 1850s, aesthetic philosophy had effectively broken away from classical concepts. Consequently, studies of classical architecture merged with the developing field of archaeology, while architectural practice and aesthetics

became linked to art and philosophy.

Since this story is well known, and general histories of the Greek Revival are readily accessible, this chapter will not rehash the details. Instead, the focus here is recent directions in eighteenth- and early nineteenth-century Greek architectural scholarship. This chapter is strongly influenced by the new social and cultural history approaches so influential in the historiography of the Grand Tour. While much scholarship in the history of classical architecture in Britain has been intent on parsing architectural style and practice, this chapter emphasizes the importance of cultural identity and myth-making. The engagement with Greek architecture during the eighteenth century was a social, cultural, and political practice that not only shaped aesthetics and articulated status but also shaped the ideologies of a nation. Studying the origins of the Greek Revival underlines the complexity of eighteenth-century classical discourses and reveals the powerful role that they played in creating modern British identities.

Setting the Scene: Hagley Hall

Mid-eighteenth-century visitors to Hagley Park in Worcestershire, the seat of George Lyttelton, 1st Baron Lyttelton, would have been immersed in one of the century's great garden parks ([Figure 34.1](#)). The poet James Thomson described it as a haven for contemplation (Alexander Pope once took refuge there), writing that the grounds provided its owner with a space of picturesque beauty where he could reflect upon history, consider the future of Britain, or simply be inspired by the Muses (1757: 36–37). Visitors were impressed with Hagley Park's bucolic groves, cascades, and hermitage, while in its grotto was a mossy bed that sometimes turned their thoughts to mortal pleasures. James Adams recorded his visit with Thomas Jefferson in 1786 and described the gardens as "superb" and "poetical," comparing them to Stowe and Blenheim (1851: 395).



Figure 34.1 Francois Vivares after Thomas Smith of Derby, “A View of Hagley Park, belonging to Sir Thomas Lyttelton Bart,” 1748, engraving, 38.7 × 54.9 cm. .

Source: Yale Center for British Art, Paul Mellon Collection (B1978.43.1099)

Lord Lyttelton was constantly improving Hagley Park, and after most of the garden was complete, he turned his attention to constructing a new house. He and his architect, Sanderson Miller, initially conceived a building in the Gothic style, perhaps inspired by his friend Horace Walpole’s first trials at Strawberry Hill. His wife Lady Elizabeth Lyttelton (née Rich), however, objected (McCarthy 1976: 217–218). In 1752, the couple decided that they preferred “the Greek architecture” (Dickins and Stanton 1910: 284). By this, they probably meant what most early modern writers meant when they referred to architecture as “Greek” or “Grecian” – an architectural mode based on proportion, symmetry, and rules usually derived from Vitruvius. It emphasized simplicity and restraint in form and details, an effect supposedly “taught by nature” and cultivated through “taste” (Whitehead 1753: 69). Montesquieu wrote of it in his *Essai sur le goût*: “The Grecian architecture, whose divisions are few, but grand and noble, seems formed after the model of the great and the sublime. The mind perceives a certain majesty which reigns through all its productions” (Gerard 1759: 276–277). Whether or not a building conformed to ancient prototypes, it was enough for contemporaries that it captured the supposed spirit of ancient Greece (Grose 1773: 124). Indeed, as late as 1777, even Edward Gibbon called the ruins of Palmyra “Grecian” (1777: 124). Consequently, even though Hagley Hall, completed in 1761, was clearly a Palladian mass that looked nothing like the temples and monuments of Greece, its stately, unadorned façade might possibly have been

considered “Grecian” by eighteenth-century standards (Figure 34.2).



Figure 34.2 James Caldwell, “Hagley Hall,” circa late eighteenth century, etching and line, 15.8 × 23.8 cm. .

Source: Yale Center for British Art, Paul Mellon Collection (B1977.14.14751)

As Hagley Hall was nearing completion, the Lytteltons commissioned another garden building, to be visible from the front of the house. Lord Lyttelton described it to the bluestocking Elizabeth Montagu as follows:

Steward seems almost as fond of my Vale, as of the *Thessala Tempe*, which I believe you heard him describe when I brought him to see you. Nor could the East Wind deter him from mounting the Hills. He is going to embellish one of them with a true Attick building, a Portico of six Pillars, which will make a fine Object to my new House, and command a most beautiful View of the Country. (Cousins 2007: 103)

What he was writing about was a garden folly, designed by the newly fashionable architect, James Stuart. Stuart modeled his temple at Hagley Park on the Hephaisteion in Athens. The folly was originally coated in white plaster, and Stuart designed metopes, meant to be exact, scaled copies of those in Athens (McCarthy 1972: 765). He subtly shifted the columns’ diameter (module) to height ratio from 1 : 6 to 1 : 7, which accorded with Vitruvian proportions and was less severe – and perhaps more pleasing – to his patron (Stuart and Revett [1762] 2007: viii). Nestled into a stand of trees, the portico was in fact the only section of the building that had any similarities to the Hephaisteion. Nevertheless, it was one of the first modern structures modeled on first-hand surveys of Greek antiquities, and many scholars point to the temple as the catalyst to the Greek Revival in Britain.

Between 1752 and 1755, James Stuart had traveled to Greece with his compatriot Nicholas Revett, living in Athens for the better part of three years. Funded primarily by the Revett family's wealth and members of the Society of Dilettanti – an elite dining society for gentlemen who had met each other on the Grand Tour and who were patrons of the arts – the two travelers focused their energy on accurately measuring and delineating the remains of Classical and Hellenistic architecture in Attica. It was the first European expedition of its kind, inspired in large part by the discoveries at Herculaneum and the stories of ancient Greek architecture told by travelers such as Jacob Spon and George Wheeler, Joseph Pitton de Tournefort, Thomas Shaw, Abbé Michel Fourmont, Richard Pocock, and John Montagu, the 4th Earl of Sandwich.

An expert at cultivating his reputation, Stuart worked with his patrons to excite the European public about their proposed publication, *The Antiquities of Athens* (1762). They circulated a series of proposals between 1748 and 1755, claiming that the work would be accurate and mathematical – meticulous to a level beyond even the example of Antoine Babuty Desgodetz's *Les Edifices antiques de Rome dessinés et mesurés très exactement* (1682). In an age in which the language of the Newtonian natural sciences was *de rigueur* for any serious scholar, Stuart and Revett's claims of objectivity and precision appealed to their audience. Not only would they offer an unsurpassed glimpse into the ancient world but they also hinted at the possibility of uncovering the Greek formulae for architectural design – perhaps helping to uncover the natural laws of beauty. And, in an age of country house building, they promised to offer new motifs to artists and architects.

Arguing for the superiority of Greek over Roman architecture, their various proposals took a polemical tone, as in this version from 1750/1751:

Rome, who borrowed her Arts, and frequently her Artificers from Greece, has by means of Palladio, Serlio, Santo Bartoli, and other Ingenious Men, preserved the Memory of the most Excellent Sculptures, and Magnificent Edifices, which once adorned her ... but Athens the mother of Elegance and Politeness, whose Magnificence scarce yielded to that of Rome, and who for the Beauties of a Correct Stile, must be allowed to surpass her, as much as an Original excels a Copy, has been always entirely neglected, and unless Exact Drawings from them be speedily made, all her Beauteous Fabricks, her Temples, her Theatres, her Palace, will drop into Oblivion, and Posterity will have to reproach us, that we have not left them a tolerable Idea of what is so Excellent, and so much deserves our Attention (Revett and Stuart 1750/1751).

Consequently, their proposals were partly responsible for sparking the so-called Greek–Roman debate, a paper war over ideal aesthetics and design

whose antagonists included Giovanni Battista Piranesi, Johann Joachim Winckelmann, Anne-Claude-Philippe de Tubières (the Comte de Caylus), Pierre-Jean Mariette, and Julien-David Le Roy (Wittkower 1938: 147–158; Piranesi and Wilton-Ely 1972; 2002).

After returning from Greece in 1755, Stuart and Revett primed an intellectual and fashionable audience by promising that their work would be modeled on the internationally successful and lavish volumes of Robert Wood, James Dawkins, and Giovanni Battista Borra: *Ruins of Palmyra* (1753) and *Ruins of Balbec* (1757). They circulated their drawings and proof sheets among elite connoisseurs, both at home and abroad, promising to use their knowledge to build examples of pure Grecian architecture for their patrons. Stuart and Revett's claims resonated with wealthy gentlemen raised on the classics (Ayres 1997; Coltman 2006). If Roman art and architecture was derivative of the Greek, as Vitruvius and Pliny suggested, then the current mode of building could only improve with the introduction of "true" Grecian examples. In an age of rapidly shifting fashions, those who commissioned works by Stuart and Revett were among the aesthetic avant-garde, and the subscribers to their publication would not only contribute to improving taste, but would also have their names associated with what was sure to be an important contribution to historical and aesthetic knowledge. Stuart and Revett delayed their publication, however, pursuing architectural commissions and public accolades. This allowed a French competitor, Julien David Le Roy, to travel to Athens, record the antiquities, and, in 1758, publish ahead of them a magisterial theoretical work, *Les Ruines des plus beaux monuments de la Grèce* (Le Roy [1770] 2004; Middleton 2004: 1–199; Armstrong 2011). Fortunately for them, Le Roy's volume met with British ambivalence, as the press claimed that it was inaccurate and far inferior to Stuart and Revett's forthcoming publication. (See [Chapter 33](#) for the French response to Le Roy.)

So, when Lord Lyttelton wrote to Elizabeth Montagu that Stuart was designing "a true Attick building" for him, he could be confident that he was on the cutting edge of taste. Except for the hexastyle Doric temple that Stuart had built at The Grove in Hertfordshire, it was then the only modern example of a building based on the first-hand study of Greek architecture (Cousins 2004: 48–54). What Stuart's temple at Hagley Park meant to Lyttelton was quite different from what the building has meant to historians of architecture. While hindsight makes it the first surviving example of the Greek Revival, Lyttelton saw it as a novelty – a device to help mark him both as an innovator and a man of taste. The temple was only one element in his overall program of landscape design—an eye-catcher from a distance—that helped frame the landscape and evoke the paintings of Claude Lorrain and Gaspard Dughet as one moved through the park. Like any folly or ruin in a picturesque landscape it was meant to spur associations between the park's views and philosophical concepts. A ruin could serve as a *memento mori* or as a point for historical

reflection, and contemporaries expected it to stimulate thinking about history, virtue, and moral duty. This technique was favored by Lyttelton's friends and fellow garden enthusiasts, Alexander Pope and Horace Walpole (Andrews 1989: 51). It appears that Miller's and Lyttelton's final design for Hagley Park did provoke this sort of reflection: one guest, William Toldervy, wrote that Stuart's temple made "one think of nothing but the Plains of *Arcadia*" (1762: 342).

Architecture based on models from Greece first entered the British architectural lexicon as a fanciful mode for garden follies, joining *chinoiserie* and the gothic. In fact, Lyttelton and Miller had no qualms about juxtaposing styles. From Hagley Hall, one could also see the faux ruins of Miller's gothic castle, another eye-catcher meant to help craft a *veduta* worthy of the Old Masters. Consequently, the park was an eclectic mix of buildings and monuments. Stuart's temple may hold pride of place as one of the first examples of an archaeologically inspired mode of designing in the Greek idiom, but, in the early 1760s, philhellenism was not yet a movement, a Greek Revival was by no means a *fait accompli*, and the archaeology of Greece was in its infancy.

The Neoclassical Mood

While Stuart's temple at Hagley Park was being built, no person could have imagined the power that Greek architecture would one day exert on the British, Irish, and American imagination. They could not have conceived that in less than a century, the visual infrastructure of urban space – from London to Newcastle to Edinburgh to Dublin to Philadelphia and beyond – would be suffused with its imprint. Nor would they have thought that Greek-inspired country houses would dot the landscapes of the Old and New Worlds, serving as icons of great wealth, taste, power, and oppression.

Between 1750 and 1800, the study of Greek architecture emerged as a pursuit of the elite. It was originally driven by philosophical aesthetics, attempts to gain social status through taste-making, and a desire to contribute to the production of knowledge, and it was the domain of the gentlemen Grand Tourists, their artists and architects. More than any other group in Britain and Ireland, the Society of Dilettanti and its members sponsored travelers and expeditions to the lands of ancient Greece. Contemporaries hoped to discover the fountainhead of artistic and architectural beauty – to see examples of what they imagined to be the purest aesthetic forms, material versions of an immaterial ideal. For some, this was an architectonic analogue to the Homeric corpus in the sublime "primitivism" at Paestum, Agrigento, and Segesta. In the subtle Ionic curves of the Erechtheion at Athens, at Priene, and at Teos, they imagined the refinement of Classical Greece, the delicacy and beauty of a

civilization at its peak. The power of the Athenian Propylaea served as an enduring image of civic duty and an icon of the wealth and power of the Athenian commercial empire.

But this eighteenth-century interest in ancient Greek architecture was not separate from an interest in ancient Roman architecture, for both inquiries served the interests of history, antiquarianism, philosophical aesthetics, and artistic practice. Nor was the reimagining of classical architecture rigorously historicist. Take, for example, the west portico of West Wycombe (1771), Nicholas Revett's interpretation of the Temple of Dionysos at Teos, which he had measured the previous decade. It fronted a house that was infused with Roman design – from Borghese's faux marble Palmyrene ceilings to Lecchi's grotesques to the hypocausts lining the floors. Nor was the use of Greek motifs in architectural practice simply a mindless copying of ancient prototypes. While contemporary architects, artists, or writers might claim that a building or an interior was in the "pure" Greek style, they were rarely making an archaeological claim; they were making an aesthetic claim that the design captured Greek spirit – or the richer notion of *geist* articulated by Winckelmann. Not until the early nineteenth century do we see a more severely archaeological and historicized handling of Greek designs in British architecture in what we might with some justification call the period of the "Greek Revival."

The impetus to engage with ancient Greek architecture – to visit, measure, record, and publish on it – emerged from a matrix of events and movements that scholars refer to more generally as neoclassicism, a mode of aesthetic engagement with the classical world that emerged in the middle of the eighteenth century. Like the advocates of seventeenth-century French academic classicism, neoclassicists emphasized order, rules, symmetry, and proportion in architecture. They focused on restraint and moderation – on an ideal beauty that could be uncovered through rational investigation. In many ways, neoclassicism was a response to supposed baroque and rococo excesses and to their styles' emphases on surface effects, illusion, and virtuosity. If the baroque mood tended to be theatrical and characterized by energy and movement, the neoclassical mood was somber and characterized by permanence and solidity. Not surprisingly in a period in which the arts were seen as analogues – Horace's dictum, *ut picture poesis*, was well known to contemporaries – neoclassicism's influence reached across the arts. The study of ancient architecture was only one piece of the larger neoclassical puzzle.

Neoclassicism was certainly not the first movement to inspire interest in the classical world. Renaissance humanism had initiated a vigorous and critical engagement with the ancient world since the fifteenth century. During the last decades of the seventeenth century, however, wealthy Europeans began to approach the material culture of the classical world in new ways. Driven by expanding commercial wealth and the rise of a consumer society, larger

numbers of wealthy connoisseurs and collectors sought antiquities, casts, copies, drawings, and prints to furnish their townhouses and country estates and to enrich their libraries and cabinets. As gentlemen and aristocrats built their collections, scholars began compiling information about them and engraving and publishing works devoted to antiquities. An urge to be encyclopedic – to catalogue and categorize the world – reached a fever pitch by the late seventeenth and early eighteenth centuries.

Increasingly, publications on antiquities – the most popular of which included those by Bianchini, de Montfaucon, and Caylus – focused on the centrality of material objects to understanding the past (de Montfaucon 1719; Caylus 1752). Rather than seeing ancient objects and artworks as curiosities or iconographic types removed from their context, eighteenth-century collectors began to follow the lead of natural historians. Comparative typology became more important, and some started to look at chronological and geographical differences. Eighteenth-century antiquaries took a more rigorous empirical approach towards the material past – what Bruce Trigger has termed “scientific antiquarianism” (2006: 106–110). Exact visual reproductions and descriptions became the *modus operandi* of the antiquarian treatise – an expectation that Baconian epistemology imposed on all practitioners of the sciences. Observation, measurement, comparison, and accuracy in representation were methodological necessities. In architecture, this was particularly important because Vitruvius had suggested that the ancients used a formal system of proportion. To uncover this system might reveal the natural harmonies that made Classical architecture so magnificent.

With more emphasis on material culture, the relationship between ancient text and object began to shift (Momigliano 1950: 285–315; Haskell 1995). Until the eighteenth century, scholars and collectors scoured ancient writings to provide evidence to help interpret antiquities. By the middle of the eighteenth century, the analysis of material objects broke away from this philological approach (Schnapp 1996: 238–242). It became essential to study objects first-hand, and ideally *in situ*. Consequently, scholars increasingly argued that material culture could speak for the societies that created them. Objects revealed a civilization’s characteristics, its nature and culture. Most were interested in the fine arts of antiquity – intaglios, sculpture, painted pottery, and architecture. While scholars studied some everyday items such as coins, few searched for pottery sherds, tools, or midden pits.

Yet even as early modern science encouraged scholars and connoisseurs to measure and record antiquity, it began to undermine some fundamental assumptions, especially for architecture. Following Vitruvius, Renaissance architects had argued that the classical lexicon was the *ne plus ultra* of architectural beauty. Seventeenth-century natural philosophers, however, were increasingly skeptical of traditional authorities. This led to a dramatic split in architectural theory, epitomized in the so-called *querelle des anciens et*

modernes (Rigault 1856; Herrmann 1973; Pérez-Gómez 1985; Levine 1999). Beginning with Roland Fréart de Chambray and culminating in the writings of Claude Perrault, the overreliance on Vitruvius' dictums came under scrutiny (Perrault 1673, 1683; de Chambray 1650). Perrault's theories took aim at the lectures of the Director of the Académie royale d'architecture, Nicolas-François Blondel, who argued that essential beauty could be found in perfect architectural proportion, which mirrored the natural harmonies of music (1675). Blondel claimed that the ancients had grasped these laws of proportion and that Vitruvius should be the guiding light for contemporary architectural practice.

There was a problem with Blondel's arguments, however. The buildings in Rome did not seem to conform to Vitruvian principles. This fact was driven home by Antoine Babuty Desgodetz, whom Jean-Baptiste Colbert, Louis XIV's closest minister, commissioned to make definitive and precise measures of the major buildings of ancient Rome. Completed between 1674 and 1677, Desgodetz's work, published in 1682, showed that Renaissance architectural treatises had misrepresented ancient buildings to conform to theories about ideal architectural proportion (Desgodetz 1682). Desgodetz's empiricism provided grist for the moderns' mill. Citing the importance of Desgodetz's work, Perrault's *Ordonnance des cinq especes de colonnes* of 1683 argued that proportion was a culturally arbitrary variety of beauty (Perrault 1683: xxvii). Since many facets of style derived from tradition and not natural laws, he encouraged architectural innovation and the freedom to break away from classical precedents. He even suggested that his contemporaries' devotion to the concept of ideal proportion was akin to superstition – a “mystery of proportions” (Perrault 1683: xvii).

The fallout from the French debates had an international impact. An “ancients and moderns” debate raged in English literary circles during the 1690s, fueled in the following decades by translations into English of architectural theory, from Palladio to Fréart to Perrault (E. Harris and Savage 1990). The growth of the Grand Tour introduced travelers, artists, and architects to continental debates over antiquity and its meanings. Through the sociable world of the Grand Tour, through their *ciceroni*, or guides, and expatriate circles, and through scholarly societies and academies, British and Irish travelers actively engaged in the international dialogue. In fact, these conflicts percolated throughout much of the eighteenth century, largely driven by the international republic of letters, the cosmopolitanism of Europe's elites, and even the competition for supremacy in the arts between states. At times, they erupted into paper wars, as in the 1710s, when the moderns challenged the supremacy of Homeric poetry and ancient Greek taste (Simonsuuri 2010: 46–56). So, when the excavations at Herculaneum during the 1730s sparked a renewed appetite for antiquity, the European world once again engaged in a debate over the relative merits of ancient and modern art and architecture.

Even without solid empirical evidence, most connoisseurs continued to argue that “Grecian” art was more ancient, more beautiful, and closer to nature than their successors, most notably the Romans – the only civilization which could vie for aesthetic supremacy. This message derived from Vitruvius on architecture and Pliny on sculpture, and conformed to the dominant interpretation of ancient literature. Nevertheless, the “ancients and moderns” debate had exposed fissures in this line of aesthetic reasoning, while the empiricism of scholars such as Desgodetz suggested that the material remains of antiquity might challenge predominant suppositions.

Antiquarianism and National Identity

By the 1730s, rumblings came from Italy not only that Roman architecture was more beautiful than the Greek but also that it had emerged from an indigenous Etruscan civilization that owed little or nothing to the Greeks. Some of the impetus for this came from Filippo Buonarroti’s edition of Thomas Dempster’s *De Etruria regali* (1723–1724), which had been commissioned by Thomas Coke, later Earl of Leicester (1744). Giovanni Battista Piranesi’s teacher, Carlo Lodoli, was an outspoken early advocate for the theory that the Etruscans developed a native architectural tradition independent from Greece and that it was their influence that laid the foundations for Roman art (Kaufmann 1955: 21–28; Consoli 2006: 195–210; Piranesi and Wilton-Ely 2002). His theories were supported by scholars, such as Antonio Gori, who also argued for the primacy of the Etruscans in works such as the *Museum Etruscum* (1736–1743). A number of antiquarian institutions devoted to the Etruscan past were created in the 1720s and 1730s. Most notable were those founded by Gori, the Accademia Etrusca di Cortona (1726) and the Società Colombaria Fiorentina (1735) (Mauro 1978: 577–625; Momigliano 1994: 302–314; Ceserani 2012: 17–75). The arguments that drove the critique of Greek supremacy in the arts were not simply aesthetic, since they were embedded in the political arena. Depending on the writer, an argument for an indigenous Etruscan civilization could also be an argument for national identity and cultural primacy. Or, in the fragmented world of eighteenth-century Italy, it might represent an anti-Roman, regional identity (Momigliano 1994: 309).

Even as the Etruscan academies were busy in the north, the excavations in Rome and Herculaneum led to the creation of new academies with their own journals further south. The Grand Tourists in these cities craved artworks representing new finds. Artists secretly sketched, smuggled, and published unauthorized engravings of Herculaneum, even when King Carlo di Borbone

(Charles VII) of Naples attempted to restrict them (Gordon 2007: 37–57). In Rome, Giuseppi Vasi and the young Giovanni Battista Piranesi responded to antiquarian demand, publishing a series of prints depicting ancient and modern Roman architecture and antiquities. Piranesi's virtuosic *vedute* in particular, grounded in solid scholarship, set a high standard for architectural treatises. Thereafter, fine art engravings became an increasingly important medium for spreading antiquarian concepts. They were elite consumer items, *objets d'art* – symbols of wealth, status, and learning – but they also served as a visual mode for pursuing debates over aesthetics. The treatises that followed Piranesi's work in the 1740s tried to achieve both the highest levels of accuracy and the finest quality of technique and materials (Piranesi 1748; 1778). In fact, the hand of the artist quickly became a polemical force through which arguments about antiquity would live or die.

The end of the War of Austrian Succession in 1748 brought a surge of tourists and artists to the Mediterranean, many of whom had plans to record and publish its many ignored Greek and Roman remains. A sequence of expeditions by Irish travelers in the circle of James Caulfeild, Earl of Charlemont, led to the first studies of Greek architectural sites in the Mediterranean. Charlemont was a major early sponsor of Stuart and Revett's 1748 proposal to study the antiquities of Athens. He traveled that same year with his tutor and the artist Richard Dalton to measure and record the monuments at Agrigento, Athens, and as far away as Bodrum, where the group discovered and recorded the frieze of the Mausoleum at Halikarnassus. Returning to Rome in 1750, he provided advice to Robert Wood, James Dawkins, and John Bouverie who planned to study the Troas, record the remains at Palmyra and Balbec, and visit Stuart and Revett in Athens. Many of Charlemont's fellow Irishmen had spent time in Sicily, and they were the core sponsors of Giuseppi Maria Pancrazi's *Antichità Siciliane spiegate* (1751–1752), the first publication on the Greek temples of Agrigento ([Figure 34.3](#)). Richard Dalton's collections of prints (1751–1752 and 1751) added two more to a series devoted to Greek architecture, but neither Pancrazi nor Dalton produced volumes that compared to their successors. Soon thereafter, the quality of Piranesi's monumental engravings of Rome and Wood, Dawkins, and Bouverie's lavish *Ruins of Palmyra* (1753) demanded that other artists and scholars also produce virtuosic plates and monumental folios.



Figure 34.3 Giuseppe Maria Pancrazi. “Veduta del Tempio della Concordia in Agrigento come presentemente esiste ove guarda l’oriente e tramanontana | all. ill. sig. Mylord Charlemonte.”

Source: 1752: pl. 13.

Even though a few travelers ventured to Greece itself, Paestum was the more typical destination for most Grand Tourists, as it is not distant from Herculaneum (Figure 34.4). The temple complex at Paestum had been known since the Renaissance, but few people took much interest in it until the mid-eighteenth century (Gatta 1732: 263; Chiosi, Mascoli, and Vallet 1986: 17–37; Ceserani 2012: 61–68). The urge to measure and record the site came only after Charlemont, Dawkins, Wood, Stuart, and Revett argued for the need to record the remains of Greek architecture. In 1750, a Neapolitan antiquarian, Count Felice Gazola, encouraged the French architects Jacques-Germain Soufflot and Gabriel-Pierre-Martin-Dumont to sketch and measure the site. Soon thereafter came a flurry of visitors and a sequence of books on the ruins (Lang 1950: 48–64; Raspi Serra 1986; Jong 2010).



Figure 34.4 Willey Reveley, “Temple Ruins at Paestum,” circa 1785, watercolor with pen and black ink over graphite, 36.8 × 52.1 cm.

Source: Yale Center for British Art, Paul Mellon Collection (B1977.14.19454).

The images of “squat” temples with no bases and bulbous proportions caught many antiquaries and connoisseurs off guard. If these were Greek temples, as most scholars claimed, they did not conform to many people’s preconceptions of Greek beauty. Initially, only the devoted apostles of *gusto Greco* were ready to confirm Winckelmann’s exclamation that Paestum’s temples were “stupenda Architettura Dorica” and, with Agrigento, models of Greek invention – that they represented the early Greek quest for magnificence and simplicity (Winckelmann 1762, 1952: 357–358; Winckelmann and Fea 1766: 517–681). For their part, Italian scholars of Etruria wished to lay claim to Paestum as part of a national heritage. To some, such as the antiquary Alessio Simmaco Mazzochi, these were Etruscan structures – proof of a non-Greek monumental architecture in Italy (Ceserani 2012: 49–69).

While these ancient architectural remains were symbols of various Italian identities during the Greek–Roman quarrel of the 1740s and 1750s, they were also semiotic sites of struggle between the rival states of Britain and France. The period beginning with the War of Austrian Succession (1740–1748) and ending with the Seven Years’ War (1756–1763) saw cultural battlefields drawn beyond the front lines. The cultural shadow of Louis Quatorze loomed over Britain, for the isles were lands of lesser artists – a realm of negligible royal patronage and aristocrats enraptured with continental painting, sculpture, and decorative goods. The lack of a national academy allowed French critics to direct barbs at their rivals to the north. In 1745 for example,

Jean-Bernard, abbé Le Blanc published a letter about the arts in England: “Painting, sculpture and the other arts that depend on drawing, are as yet either unknown here, or in their infancy at most.” The British lacked taste, and this could be tied to their lack of a national art academy (Le Blanc 1747: 39, 156). Connoisseurs and artists alike recognized the validity of his statement, even if they were loath to admit it. A note in the *Gentleman’s Magazine* of 1749 argued, “that the English excel in genius, and have a natural taste superior to that of foreigners, I think, is very evident, from the great improvements which they have made in the polite arts, unassisted by the important auxiliaries which are furnished abroad by public academies” (Anonymous 1749: 319). For all this puffing, there was little evidence to point to – except in the realm of architecture. Even in architecture, the French were much more theoretically sophisticated than their northern rivals, probably owing to the existence of the academy system (see [Chapter 33](#)).

Wars and cultural rivalries were drivers of nationalism, and these tensions seeped into the language of archaeology, aesthetics, and even personal rivalries between artists. James Stuart’s attack on Le Roy’s work in *Antiquities of Athens* is a prime example. He accused the French theorist for lazy measurement and inattention to detail; Le Roy was “extremely inaccurate and licentious” (Stuart and Revett [1762] 2007: 5 fn.). In so doing, Stuart was invoking an ideological trope that claimed the superiority of British over French science, the primacy of empiricism in relation to rationalism – that there was something particularly “British” in the business of empirical science. His criticism of Le Roy served a double function by both assaulting his rival and suggesting that their differences were based in contrary national cultures of art and science. Stuart argued that architectural theories should emerge only from accurate measurements: “But as Mons. Le Roy’s Animadversions and Reasonings on this Building, are deduced from such mistaken Facts, it would be superfluous to canvas any more of the Notions he has advanced concerning it.” Indeed, if British book reviews are any guide, after *Antiquities of Athens*, readers critiqued architectural treatises by their supposed empirical veracity.

Thus, in the mid-eighteenth century, the pursuit of ancient architecture was wrapped up in the global struggles of Europe’s great powers. Never symbolically neutral, the study of Greek architecture took on a proto-nationalistic air. The ideal of elite cosmopolitanism in patronage and scholarship – of an *ancien regime* cultural world that could stand apart from economic and political interests – began to fracture from the pressures of national rivalries. In fact, among the middling sorts in Britain, elite cosmopolitanism became increasingly suspect – a marker of anti-Britishness, femininity, foppishness, and a host of other supposedly inferior character traits. Wealthy patrons, such as the members of the Society of Dilettanti, and their artists were well aware of these changes, and the language of

architecture, aesthetics, and antiquarianism changed as a result. For their part, British treatises on ancient architecture drifted away from their continental counterparts. Whereas French architectural treatises pushed the theory and practice of form and function to their logical conclusions, British writers generally stuck to a strict, empirical line. In Britain, the job of the student of Greek architecture was to accurately measure, record, and increasingly collect examples for posterity. But, of course, scholarship is never neutral, and like so much eighteenth-century art and science, it served the needs of the Empire.

Appropriating Ancient Greece

At the beginning of the eighteenth century, most writers on architecture assumed that classical Roman and Greek architecture provided the building blocks of beauty. The influx of new discoveries and the expanded world of print production increased interest, and patrons, artists, and antiquarians alike spent the century examining the architecture of antiquity. They increasingly cast a wider net for new examples, and Britons were at the center of this pursuit. By the 1760s, scholarship on Greek architecture even moved beyond Athens to states further east, and the Society of Dilettanti sent a multiyear expedition to study the architecture of Ionia with the express commission to be as accurate as possible. The first of its kind to be sponsored by a European society or academy, it examined little-studied antiquities, including temples at Priene and Teos.

This widespread interest in the classical world did not take place in a sociocultural vacuum. During and after the Seven Years' War (1756–1763), national sentiment was at an all-time high. Britain had defeated France, and the British East India Company had conquered large territories in India. This brought the state new formerly French colonies and millions of new subjects from around the globe, individuals who joined British laborers toiling on farms and in workshops, and slaves working the lands of the plantocracy in British America. While the commercial opportunities that this situation afforded to merchants helped to sooth some uneasiness about the destruction, greed, and atrocities that the process entailed, a national identity based solely on imperial ambition and commercial exploitation ran counter to more traditional notions of Britishness. Some contemporaries worried about the loss of Christian morals. Political critics fretted about the national loss of civic virtue, as the profit motive seemed to corrupt state institutions (Dirks 2008). Elites worried that their ideal of developing inner morality while rejecting self-interested motivations in public life, a product of a classicist Stoicism, would disappear in the new commercial atmosphere. Classicism, however, was a malleable discourse and remained relevant in the emergent British imperial world.

The example of Greece, and Athens in particular, was a useful antidote to any self-doubt, guilt, and criticism: at its simplest, ancient Greece served as an analogue to modern Britain. Publications examining Greek history and architecture played a role in articulating new tropes of Britishness that better matched emerging political realities. Classical Athens was also an imperial, slave society whose commercial and military power allowed it to produce timeless works of art. In his introduction to *Ionian Antiquities* in 1769, Robert Wood wrote of Athens,

More original Genius than ever was collected in so narrow a Compass at one Period, reaped the Fruits of literary Competition in a degree that never fell to the lot of any other People, and has been generally allowed to fix the Era which has done most Honour to the Science, and to take the lead among the antient Greek Republics in matters of Taste. (Chandler, Revett, and Pars 1769: iii)

Writers often compared British liberties – ill-defined as they often were – with the supposed liberties of ancient Greek citizens. This comparison reinforced ideas about the freedoms enjoyed by the crown’s subjects but denied under French absolutism, and it allowed Britons to maintain the illusion that their civilization mirrored classical Greece. It also meshed well with Winckelmannian aesthetic theories, which claimed that the spirit of liberty was central to the beauties of Greek art and architecture. William Young, writing in 1786, could expect his readers to infer the allusion to modern Britain (as well as to Thucydides 2.41.1), when he claimed that Athens’ political and commercial institutions were central to its arts: “Athens long famed for liberty, commerce, and the empire of the seas, – be thereafter not less famous as *a school to all nations for the liberal arts, eloquence, and philosophy!*” (1786: 240).

Still, for all the talk of Greek liberty, architectural theorists in Britain were hardly radicals – after all, major expeditions and publications on the architecture of ancient Greece were sponsored by elites and reflected an ideological perspective that favored the status quo. This was especially true during the conservative reaction to war with France in the 1790s. When the Society of Dilettanti published the second volume of *Ionian Antiquities* in 1797, the group took pains to articulate a notion of Athenian liberty that was more in line with moderate Whig concepts of the “freeborn Briton”:

In considering these facts, and reflecting on this real state of things in those ancient republics, which have been so generally admired, as models of the most free, and happy government, we cannot but smile at the presumptuous ignorance and temerity of those pretended politicians and philosophers of modern times, who are perpetually recommending their wild and impracticable theories of equal liberty, and pure democracy ... The citizens might, indeed, have enjoyed some degree of liberty, and even

of license ... But the citizens constituted, in every state, but a very small portion of the people; the bulk of whom were slaves, absolutely at the disposal of their owners ... Other modern sophists, of a very different kind from these shallow retailers of the froth of history, have taken the contrary extreme; and because their deep researches could not discover that liberty, happiness, and security ... we may, in answer to all the sceptical reasoning that human ingenuity can produce, point to the vast remains of splendour and power in the mouldered ruins of their public buildings. (Chandler, Revett, and Pars. 1797: viii–ix)

The Birth of the Greek Revival

The last decades of the eighteenth century incubated the Greek Revival. New treatises on ancient architecture joined those of Wood, Dawkins, and Borra, Le Roy, Piranesi, Stuart and Revett, and the Society of Dilettanti. These included Robert Adam's *Ruins of the Palace of the Emperor Diocletian at Spalatro* (1764), Thomas Major's *Ruins of Paestum* (1769), and Charles Cameron's *Baths of the Romans* (1775). These publications were followed by a series of internationally influential picturesque travel narratives, which romanticized Greece, its history, and its material culture for a wider audience. The three most important of these were Richard Chandler's *Travels in Greece* (1776), funded in part by the Society of Dilettanti; Jean-Jacques Barthélemy's *Voyage du jeune Anacharsis en Grèce* (1787); and Marie-Gabriel-Florent-Auguste de Choiseul-Gouffier's *Voyage pittoresque de la Grèce* (1782).

As a new generation of architects and patrons imbibed the lessons of Stuart and Revett, their experiments in architecture moved away from the stylistic eclecticism of earlier neoclassicists. Increasingly, they tried to make their buildings both stylistically consistent and archaeologically accurate, even as they stretched Greek monumental architecture to match the needs of modern public and private building. So, for example, the east portico of The Grange (1804–1809), designed by William Wilkins, who had just returned from Greece, closely followed the model of the Hephaesteion. Later additions by Robert Smirke and C.R. Cockerell continued the Grecian mode, including a dining hall based on the cella of the Temple of Apollo Epikourios at Bassai (Watkin 1974: 172).

Quite often, patrons were encouraged to follow archaeological models in order to appear scholarly, or, at other times, to appear tasteful. In nearly all cases, however, architects and their patrons adopted the lexicon of Greek architecture because it was *à la mode*. As such, the rise of Grecian architecture was predicated on its fashionability, and many new buildings found their forms strained to match their uses. For example, James Wyatt designed the south gatehouses to Blagdon Hall, Northumberland (1786) as

miniature versions of the Tower of the Winds. They are attached via screens to pediments on which rested statues of bulls, the symbol of the Ridley family.

In order to remain at the edge of fashion, architects and patrons constantly went searching for new examples and motifs. So the austerity of the Greek Doric, which once seemed too severe for anything but a garden folly, eventually found its place next to the more delicate designs of the neoclassical and Palladian. In part, its adoption was helped by the nascent romanticism of the period, most notably the aesthetics of the sublime and primitive. Even the Archaic, heavy columns and capitals of Paestum found interpretations in Henry Benjamin Latrobe's Hammerwood Park, Sussex (1796) and John Soane's so-called Barn à la Paestum at Malvern Hall, Warwickshire (1798).

As interest in all-things-Greek grew, the interest in collecting Greek antiquities grew with it. With relatively few travelers to the lands of Classical Greece in the eighteenth century, there was little trade in Greek antiquities – certainly not on the scale seen in Italy. Stuart and Revett's and the other Dilettanti expeditions returned with only a few inscriptions and two small bits of the Parthenon frieze, while Choiseul-Gouffier was more ambitious and purchased larger sections of the frieze and metopes. Still, for the most part, travelers and collectors alike left items *in situ*. The wars between France and Britain changed this, fuelling the collection of Greek antiquities as part of a larger national rivalry to fill national museums (Hook 2010: 205–242).

As the French armies moved across Europe and North Africa, British commentators declaimed the French seizure of national heritage – particularly in the French looting of Italian collections. Nevertheless, at the turn of the century, Thomas Bruce, 7th Earl of Elgin and Ambassador to the Ottoman Empire, used national resources to remove large sections of the Parthenon frieze and metopes, despite vocal criticism from fellow British antiquarians (Spencer 1954: 194–211; St. Clair 1967; Miles 2008: 307–319). And, when the Royal Navy captured the French ship, *l'Arabe*, in 1803, they wasted no time seizing a shipment of Choiseul-Gouffier's Parthenon marbles and taking them to London.

By the end of the first decade of the nineteenth century, the Greek Revival was born. Greek architecture was the rage for private and public façades and interiors, a situation that would continue for two decades. The war with France had made celebrities of those who brought cultural credit to the British nation, and this included Lord Elgin, who wished the British Museum to purchase his horde. The government recognized the value of Greek architecture as a tool with which to shape national identity, and after the Battle of Waterloo (1815), the debate over repatriating art looted by Napoleon gave further impetus to increase British holdings of antiquities. Not only were the British the modern-day Athenians but also they could be the protectors of Greek heritage, displaying it for the edification of the nation. So, when a

group of British and German collectors, who formed a club in Athens, which they called the Xeneion, began to auction sculptures from Classical Greek temples, the British government jostled with French and German governments to get their hands on them (Hooock 2010: 227–228). The first, the so-called Aigina Marbles from the Temple of Aphaia on Aigina, were lost to Ludwig of Bavaria in 1812. Ludwig had his architect, Leo von Klenze, build the neoclassical Glyptothek to house them in Munich. Not to be outdone a second time, the government purchased the frieze from the Temple of Apollo Epikourios at Bassai in 1815, and in the next year (after Waterloo), Elgin's Parthenon marbles were purchased for the British Museum.

Like so many modish things, however, the quick appropriation of Greek architecture both diluted its effectiveness and limited its creative potential. Despite the intense philhellenism of the 1820s, brought on by the War of Greek Independence, the Greek Revival style became increasingly rule-bound in Britain. Attention to archaeological prototypes became mindless copying in the hands of lesser architects. Even Charles R. Cockerell, a Xeneion and Dilettanti member, and one of the most learned students of Greek architecture, recognized this:

Until the attention of the world was drawn to the study of Greece by the spirit of the last century by Barthelemy's Anacharsis & the refinement of English education in the Dead languages & thence to the study of Greek architecture by the researches of Stuart & [Revett] architecture had for its guide in this Country the Old Italian masters & their valuable commentaries & publications of the anc[ien]t arch[itectur]e of Rome and Italy. No great enormities could arise under such guidance, but since the rage for Greek has been amongst us all the rules which formerly protected us are now set aside & we are at sea without compass ... we stick a slice of an anc[ien]t Greek Temple to a Barn which is called breadth & simplicity, than which nothing can be more absurd, as the Greek Houses were certainly of wood & brick & plaister painted & temporary things. I am sure that the grave & solemn arch[itectur]e of Temples were never adopted to Houses, but a much lighter style, as we may judge by the vases, the object being space & commodiousness. (Watkin 1974: 65)

The attacks by Pugin and Ruskin in the 1830s were challenges to the seemingly static nature of Greek Revival architecture. They critiqued it for adopting, instead of inventing, copying as opposed to creating, following rules rather than expressing individuality. It should be remembered that 100 years earlier, the architecture of Athens, Paestum, Agrigento, and Priene helped inspire a sea change in European approaches to the Classical past. They encouraged a break with Renaissance traditions, and, in fact, helped scholars begin to historicize the past and approach the material culture of the ancient world in new ways. The study of Greek architecture was a discourse that appealed primarily to elites, bound up as it was in their social, cultural, and

political worlds. Most importantly, it was a framework that helped work out notions of national identity. In many ways, the Gothic Revival continued these trajectories, but with a new lexicon that emphasized subjective experience and the rejection of abstract laws in favor of individual creativity.

FURTHER READING

The historiography of the Grand Tour is central to understanding the reception of Greek architecture in the eighteenth century. On the culture of the Grand Tour, see Watkin 1996, Wilton and Bignamini 1996, Chard 1999, Hornsby 2000, Findlen, Roworth, and Sama 2009, Tice 2010, Marshall, Russell, and Wolfe 2011, Kelly 2012, and Sweet 2012. On the intersections between the Grand Tour and the history of archaeology, see Kelly 2009. The standard reference book for the British and Irish Grand Tour is Ingamells and Ford 1997. For general introductions to the history of archaeology, see Schnapp 1996 and Trigger 2006; on early travelers to Greece, Constantine 1984. Model approaches on the history of classical archaeology include Bignamini 2004, Dyson 2006, Bignamini and Hornsby 2010, and Ceserani 2012. Good introductions to the history of early modern collecting, important for architectural history too, include Pearce 1995, Findlen 1996, Smith and Findlen 2001, Swann 2001; on debates about ethics, Miles 2008. On the history of display, specifically as it relates to cabinets and museums, see Paul 2000 and 2008 and Impey and MacGregor 2001. The following specifically engage with patterns of British antiquities collecting: Jenkins 1995, Jenkins and Sloan 1996, Guilding 2001, Scott 2003, Sloan and Burnett 2003, Anderson, *et al.* 2004, Coltman 2009, and Frederiksen and Marchand 2010. The academic literature on neoclassicism and the Greek Revival is vast; three surveys of neoclassicism stand out as useful introductions: Honour 1968, Irwin 1997, and Toman 2011. For an introduction to aesthetics, Krufft 1994 is a useful guide. On neoclassicism generally, see Summerson 1989, Worsley 1995, J. Harris and Snodin 1996, Salmon 2000, McParland 2001, Curl 2002, Piranesi and Wilton-Ely 2002, and Watkin 2008. On the Greek Revival, see Wiebenson 1969, Crook 1972, Watkin 1996, Middleton 2004, Soros 2006, Armstrong 2011, and Winckelmann 2006. Colvin 2008 is the standard biographical reference for British architects, while the Pevsner Architectural Guides trace the development of architecture throughout Britain and, to a lesser extent, Ireland.

REFERENCES

Adams, J. 1851. *The Works of John Adams, Second President of the United States*. Vol. 3. Boston.

Anderson, R.G.W., M.L. Caygill, A.G. MacGregor, and L. Syson, eds. 2004. *Enlightening the British: Knowledge, Discovery and the Museum in the Eighteenth Century*. London.

Andrews, M. 1989. *The Search for the Picturesque: Landscape Aesthetics and Tourism in Britain, 1760–1800*. Stanford.

[Anonymous]. 1749 *Gentleman's Magazine*, vol. 19 (July): 319.

Armstrong, C.D. 2011. *Julien-David Leroy and the Making of Architectural History*. New York.

Ayres, P.J. 1997. *Classical Culture and the Idea of Rome in Eighteenth-Century England*. Cambridge.

Bignamini, I. 2004. *Archives and Excavations: Essays on the History of Archaeological Excavations in Rome and Southern Italy from the Renaissance to the Nineteenth Century*. Rome.

Bignamini, I. and C. Hornsby. 2010. *Digging and Dealing in Eighteenth-Century Rome*. New Haven.

Blondel, N.-F. 1675. *Cours d'architecture*. Paris.

Bowersock, G.W. and T.J. Cornell, eds. 1994. *A.D. Momigliano: Studies on Modern Scholarship*. Berkeley.

Caylus, Comte de [Anne-Claude-Philippe de Tubières]. 1752. *Recueil d'antiquités Égyptiennes, Étrusques, Grecques et Romaines*. 7 vols. Paris.

Ceserani, G. 2012. *Italy's Lost Greece: Magna Graecia and the Making of Modern Archaeology*. Oxford.

Chandler, R., N. Revett, and W. Pars. 1769, 1797. *Ionian Antiquities*. 2 vols. London.

Chard, C. 1999. *Pleasure and Guilt on the Grand Tour: Travel Writing and Imaginative Geography, 1600–1830*. Manchester.

Chiosi, E., L. Mascoli, and G. Vallet. 1986. "La Scoperta di Paestum." In Raspi Serra, ed, 17–37.

Coates, V.C.G. and J.L. Seydl, eds. 2007. *Antiquity Recovered: The Legacy of Pompeii and Herculaneum*. Los Angeles.

Coltman, V. 2006. *Fabricating the Antique: Neoclassicism in Britain, 1760–1800*. Chicago.

Coltman, V. 2009. *Classical Sculpture and the Culture of Collecting in*

Britain since 1760. Oxford.

Colvin, H. 2008. *A Biographical Dictionary of British Architects, 1600–1840*. 4th ed. New Haven.

Consoli, G.P. 2006. "Architecture and History: Vico, Lodoli, Piranesi." *MAAR*, Suppl. 4: 195–210.

Constantine, D. 1984. *Early Greek Travellers and the Hellenic Ideal*. Cambridge.

Cousins, M. 2004. "Athenian Stuart's Doric Porticoes." *Georgian Group*, 14: 48–54.

Cousins, M. 2007. "Hagley Park, Worcestershire." *Garden History*, 35: 1–152.

Crook, J.M. 1972. *The Greek Revival: Neo-Classical Attitudes in British Architecture, 1760–1870*. London.

Curl, J.S. 2002. *Georgian Architecture in the British Isles 1714–1830*. 2nd ed. Newton Abbot.

de Chambray, R.F. 1650. *Parallele de l'architecture antique et de la moderne*. Paris.

de Montfaucon, B. 1719. *L'Antiquité expliquée et représentée en figures*. Paris.

Desgodetz, A.B. 1682. *Les Edifices antiques de Rome dessinés et mesurés très exactement*. Paris.

Dickins, L. and M. Stanton, eds. 1910. *An Eighteenth-century Correspondence*. New York.

Dirks, N.B. 2008. *The Scandal of Empire: India and the Creation of Imperial Britain*. Cambridge, MA.

Dyson, S.L. 2006. *In Pursuit of Ancient Pasts: A History of Classical Archaeology in the Nineteenth and Twentieth Centuries*. New Haven.

Findlen, P. 1996. *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy*. Berkeley.

Findlen, P., W.W. Roworth, and C. Sama, eds. 2009. *Italy's Eighteenth Century: Gender and Culture in the Age of the Grand Tour*. Stanford.

Frederiksen, R. and E. Marchand, eds. 2010. *Plaster Casts: Making, Collecting and Displaying from Classical Antiquity to the Present*. Berlin.

Gatta, C. 1732. *Memorie topografico-storiche della provincia di Lucania*. Naples.

Gerard, A. 1759. *An Essay on Taste*. Edinburgh.

Gibbon, E. 1777. *The History of the Decline and Fall of the Roman Empire*. Vol. 2. London.

Gordon, A.R. 2007. "Subverting the Secret of Herculaneum: Archaeological Espionage in the Kingdom of Naples." In Coates and Seydl, eds., 37–57.

Grose, F. 1773. *The Antiquities of England and Wales*. Vol. 1. London.

Guilding, R. 2001. *Marble Mania: Sculpture Galleries in England 1640–1840*. London.

Harris, E. and N. Savage. 1990. *British Architectural Books and Writers 1556–1785*. Cambridge.

Harris, J. and M. Snodin. 1996. *Sir William Chambers: Architect to George III*. New Haven.

Haskell, F. 1995. *History and Its Images: Art and the Interpretation of the Past*. New Haven.

Herrmann, W. 1973. *The Theory of Claude Perrault*. London.

Honour, H. 1968. *Neo-classicism*. London.

Hooch, H. 2010. *Empires of the Imagination: Politics, War, and the Arts in the British World, 1750–1850*. London.

Hornsby, C. 2000. *The Impact of Italy: The Grand Tour and Beyond*. Rome.

Impey, O. and A. MacGregor. 2001. *The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe*. Looe.

Ingamells, J. and B. Ford. 1997. *A Dictionary of British and Irish Travellers in Italy, 1701–1800*. New Haven.

Irwin, D.G. 1997. *Neoclassicism*. New York.

Jenkins, I. 1995. *Archaeologists and Aesthetes in the Sculpture Galleries of the British Museum 1800–1939: In the Sculpture Galleries of the British Museum 1800–1939*. London.

Jenkins, I. and K. Sloan. 1996. *Vases & Volcanoes: Sir William Hamilton and His Collection*. London.

Jong, S.D. 2010. "Rediscovering Architecture: Paestum in Eighteenth-Century Architectural Experience and Theory." PhD dissertation, University of Leiden.

Kaufmann, E. 1955. "Piranesi, Algarotti, and Lodoli: A Controversy in XVIII Century Venice." *Gazette Des Beaux-Arts*, 2: 21–28.

Kelly, J.M. 2009. *The Society of Dilettanti: Archaeology and Identity in the British Enlightenment*. New Haven.

Kelly, J.M. 2012. "Letters from a Young Painter Abroad: James Russel in Rome, 1740–1763." *Walpole Society*, 74: 61–164.

Kruft, H.W. 1994. *A History of Architectural Theory from Vitruvius to the Present*. New York.

Lang, S. 1950. "The Early Publications of the Temples at Paestum." *Journal of the Warburg and Courtauld Institutes*, 13: 48–64.

Le Blanc, J.-B. 1747. *Letters on the English and French Nations*. 2 vols. London.

Le Roy, J.-D. 1758. *Les Ruines des plus beaux monuments de la Grèce*. Paris.

Le Roy, J.-D. [1770] 2004. *The Ruins of the Most Beautiful Monuments of Greece*. Translated by D. Britt with an introduction by R. Middleton. Los Angeles.

Levine, J. M. 1999. *Between the Ancients and the Moderns: Baroque Culture in Restoration England*. New Haven.

Marshall, D.R., S.M. Russell, and K.E. Wolfe, eds. 2011. *Roma Britannica: Art Patronage and Cultural Exchange in Eighteenth-Century Rome*. Rome.

Mauro, C. 1978. "Sugli Inizi dell'Etruscheria'." *MEFRA*, 90: 577–625.

McCarthy, M. 1972. "Documents on the Greek Revival in Architecture." *The Burlington Magazine*, 114: 760–769.

McCarthy, M. 1976. "The Building of Hagley Hall, Worcestershire." *The Burlington Magazine*, 118: 214–225.

McParland, E. 2001. *Public Architecture in Ireland, 1680–1760*. New Haven.

Middleton, R. 2004. "Introduction." In Le Roy, 1–199.

Miles, M.M. 2008. *Art as Plunder: The Ancient Origins of Debate*

about Cultural Property. Cambridge.

Momigliano, A. 1950. "Ancient History and the Antiquarian." *Journal of the Warburg and Courtauld Institutes*, 13: 285–315.

Momigliano, A. 1994. "A Return to Eighteenth-Century 'Etruscheria': K.O. Müller." In Bowersock and Cornell, eds., 302–14.

Pancrazi, G.M. 1751–1752. *Antichità Siciliane Spiegate*. Naples.

Paul, C. 2000. *Making a Prince's Museum: Drawings for the Late-Eighteenth-Century Redecoration of the Villa Borghese*. Los Angeles.

Paul, C. 2008. *The Borghese Collections and the Display of Art in the Age of the Grand Tour*. Farnham.

Pearce, S.M. 1995. *On Collecting: An Investigation into Collecting in the European Tradition*. London.

Pérez-Gómez, A. 1985. *Architecture and the Crisis of Modern Science*. Boston.

Perrault, C. 1673. *Les Dix livres d'architecture de Vitruve*. Paris.

Perrault, C. 1683. *Ordonnance des cinq especes de colonnes*. Paris.

Piranesi, G.B. 1748. *Antichità Romane de' tempi della repubblica e de' primi imperatori*. Rome.

Piranesi, G.B. 1778. *Vedute di Roma*. Rome.

Piranesi, G.B. and J. Wilton-Ely. 1972. *The Polemical Works, Rome 1757, 1761, 1765, 1769*. Farnborough, Hants.

Piranesi, G.B. and J. Wilton-Ely. 2002. *Observations on the Letter of Monsieur Mariette: with Opinions on Architecture, and a Preface to a New Treatise on the Introduction and Progress of the Fine Arts in Europe in Ancient Times*. Los Angeles.

Raspi Serra, J., ed. 1986. *La Fortuna di Paestum e la memoria moderna del dorico 1750–1830*. Vol. 1. Florence.

Revett, N. and J. Stuart. 1750/1751. "Proposals for Publishing a New and Accurate Description of Antiquities in Attica." British Library, Lansdowne MSS, 1056, f. 77.

Rigault, A.H. 1856. *Histoire de la querelle des anciens et des modernes*. Paris.

Salmon, F. 2000. *Building on Ruins: The Rediscovery of Rome and English Architecture*. Farnham.

Schnapp, A. 1996. *The Discovery of the Past*. Translated by I. Kinnes and G. Varndell. London.

Scott, J. 2003. *The Pleasures of Antiquity: British Collectors of Greece and Rome*. New Haven and London.

Simonsuuri, K. 2010. *Homer's Original Genius: Eighteenth-Century Notions of the Early Greek Epic (1688–1798)*. Cambridge.

Sloan, K. and A. Burnett, eds. 2003. *Enlightenment: Discovering the World in the Eighteenth Century*. London.

Smith, P. and P. Findlen, eds. 2001. *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe*. London.

Soros, S.W. 2006. *James "Athenian" Stuart, 1713–1788: The Rediscovery of Antiquity*. New Haven.

Spencer, T. 1954. *Fair Greece, Sad Relic: Literary Philhellenism from Shakespeare to Byron*. London.

St. Clair, W. 1967. *Lord Elgin and the Marbles*. London.

Stuart, J. and N. Revett. [1762] 2007. *The Antiquities of Athens*. New York.

Summerson, J. 1989. *Architecture in Britain: 1530–1830*. 9th ed. New Haven.

Swann, M. 2001. *Curiosities and Texts: The Culture of Collecting in Early Modern England*. Philadelphia.

Sweet, R. 2012. *Cities and the Grand Tour: The British in Italy, c.1690–1820*. Cambridge.

Thomson, J. 1757. *The Seasons*. London.

Tice, J., ed. 2010. *Giuseppe Vasi's Rome: Lasting Impressions from the Age of the Grand Tour*. Eugene.

Toldervy, W. 1762. *England and Wales Described*. London.

Toman, R. 2011. *Neoclassicism & Romanticism: Architecture, Sculpture, Painting, Drawing*. Potsdam.

Trigger, B.G. 2006. *A History of Archaeological Thought*. 2nd ed. Cambridge.

Watkin, D. 1974. *The Life and Work of C.R. Cockerell*. London.

Watkin, D. 1996. *Sir John Soane: Enlightenment Thought and the*

Royal Academy Lectures. Cambridge.

Watkin, D., ed. 2008. *Thomas Hope: Regency Designer*. New Haven.

Whitehead, W. 1753. *The World*. Vol. 1 (22 March 1753). London.

Wiebenson, Dora. 1969. *Sources of Greek Revival Architecture*. London.

Wilton, A. and I. Bignamini. 1996. *Grand Tour: The Lure of Italy in the Eighteenth Century*. London.

Winckelmann, J. 1762. *Anmerkungen über die Baukunst der Alten Tempel zu Girgenti in Sicilien*. Leipzig.

Winckelmann, J. 1952. *Briefe*. Vol. 1. Berlin

Winckelmann, J. and C. Fea. 1766. *Histoire de l'art chez les anciens*. Amsterdam.

Winckelmann, J. 2006. *History of the Art of Antiquity*. Translated by H.F. Mallgrave. Los Angeles.

Wittkower, R. 1938. "Piranesi's 'Parere su l'architettura.'" *Journal of the Warburg Institute*, 2: 147–58.

Worsley, G. 1995. *Classical Architecture in Britain: The Heroic Age*. New Haven.

Young, Sir W. 1786. *The History of Athens: Politically and Philosophically Considered, with the View to an Investigation of the Immediate Causes of Elevation, and of Decline, Operative in a Free and Commercial State*. Vol. 3. London.

CHAPTER 35

Ancient Ruins and Their Preservation: The Case Study of the Parthenon's East Porch

Lena Lambrinou

There are two conquerors of the forgetfulness of men, Poetry and Architecture ...

(Ruskin [1880] 1989: 178)

Memory and its Preservation: Past and Present

Monuments erected to prolong and ensure the survival of historical and communal memory can be identified in every society that possesses an evolved self-consciousness and sensitivity to the distinction of its own culture. Inherent within such public displays is a universal need to connect the living with the familiar, still somehow inspirational past – a past important exactly because of this remembered intimacy and meaning, and whose memory or material traces are therefore considered worthy of recognition, preservation, and perpetuation for the future. In today's preservation of cultural artifacts or monumental structures as historical relics, exemplified by the ongoing efforts to preserve the Parthenon on the Acropolis in Athens, the questions of communal memory and how it should be manifested materially remain fundamental.

Plutarch describes the preservation of Theseus' ship in fourth-century BCE Athens and the philosophical questions it raised (*Thes.* 23.1). The ship provided proof of the hero's existence and the reliability of his story. Its preservation was an effort to keep his memory alive through a tangible object. Although maintenance of the wooden ship involved the occasional and sometimes controversial replacement of its perishable material, ancient Athenian society perceived this object as an historical relic that once belonged to their hero, a genuine article of memorabilia. Such preservation of relics was not an unusual practice for ancient Greeks, as also evinced by the Persian-burned temples on the Acropolis that were kept untouched for 30 years (480–circa 450 BCE) before being demolished for new constructions. The memory of important past events was also safeguarded through the organization of

festivals as opportunities for collective recollection by means of imitative experience. This means of communal preservation of important memories involved interpretative artistic expression through theatrical action. The ancient Greek understanding of memory was not necessarily bonded with a need for material authenticity but instead emphasized the idea behind a relic or the shared remembrance of a past event.

Although parts of the wooden structure of Theseus' ship were constantly being replaced, the whole entity, as an existing, three-dimensional object and the material expression of an idea, was considered to be an authentic relic. Similarly, although the pre-Parthenon and other burned temples on the Acropolis were eventually replaced with new ones, the identities of the preceding structures continued to live on within the new buildings in an unmistakable continuity – as if they were still the same structures. The ship of Theseus thus served an idea that needed a relic, not the opposite, just as the Parthenon – in whatever revised or rebuilt form the temple took – served to honor and carry on the memory and worship of the goddess Athena. In contemporary Greece, communal memory still holds great importance, although perceptions of relics, especially architectural ruins, and their material preservation have evolved.

The roots of present-day approaches to Greco-Roman antiquities can be traced back to the end of the Middle Ages, when the humanistic and artistic movement to revive the glorious ancient past led to Renaissance Europeans rediscovering and reevaluating their ancient heritage. The unearthing and preserving of antiquity's traces, in addition to providing tangible proof for its existence, was aimed at bonding the ephemeral present with an age-old but familiar past. Historical relics evoked certain real or perceived values from the past, and their possession was of contemporary social value to their owners. To possess such pieces of tangible history was felt to provide a link to their original owners (Lowenthal 1995: 43). The "*poetique des ruines*" (Diderot, *Encyclopedie* 1755, in Middleton 2004: 25; Mortier 1974: 91) was so seductive that it led to a major fashion of elaborately reproducing decorative, artificial ruins in Europe during the eighteenth century (e.g., *Tempietto Diruto*, Villa Albani, in Watkin 2005: 373). Very soon, however, this trend was eclipsed by the more thrilling quest for authentic ruins, the looting of which would quickly become legitimized as a "scientific" activity often pursued under the guise of salvaging important historical relics (Beard 2002: 86).

The concept of a "ruin" was related to the remains of important buildings, not of simple dwellings (Diderot, *Encyclopedie* 1755, in Jokilehto 1986: 109). Such ruins were expected to have a striking effect on the viewer – reminding him of "some bygone grandiosity, a majesty and dignity absent of the homely, full with thrilling secrets" (Lowenthal 1995: 53). These emerging attitudes to ruins can be seen especially in the 1758 publication of Julien-David Le Roy (Middleton 2004: 25; Le Roy [1758] 2004; [Figure 35.1](#)). Notions of aesthetic

ideals including Beauty, the Picturesque, and the Sublime were discussed extensively (Burke 1757: 41, 73; Ruskin [1880] 1989: 189). These ideas were also used to describe the sentiments provoked within a viewer by a ruin and came to be reflected in decisions concerning the preservation of antiquities (Jokilehto 1986: 94). (See also [Chapters 33](#) and [34](#).)



Figure 35.1 J.Ph. le Bas, “View of the Temple of Minerva in Athens,” 1758.

Source: Le Roy 1758. Reproduced by kind permission of Gennadeion Library, American School of Classical Studies in Athens.

The growth of nationalism in European countries fostered a desire for the protection and elaboration of historic monuments as concrete evidence of national identity, although the choices made for revival, preservation, and presentation of the past were somewhat serendipitous. Familiarity with Greek art dramatically increased, following the publication of the wonderfully illustrated volumes by architects James Stuart and Nicolas Revett (Stuart and Revett [1762] 2007; see [Chapter 34](#)). Johann Joachim Winckelmann, meanwhile, was the first to recognize Greek art’s archetypal role in art history. He formulated principles for a rational approach to the repair of ancient works of art, while he also made distinctions between originals and copies of sculpture – an initial step in assessment that became fundamental in later restoration policies (Jokilehto 1999: 47, 63).

In the second half of the eighteenth century, excavators at Herculaneum, Pompeii, and Stabiae had already faced challenges of how to deal with the preservation of their extraordinary architectural findings. In Pompeii, engineer Francesco La Vega made the first attempts at architectural reconstruction to “satisfy the public” (Jokilehto 1986: 86). The Kingdom of the Two Sicilies, with the aim of safeguarding and elaborating its glorious past, implemented

the first architectural interventions on the temples of Paestum (Cipriani 2004). The French Revolution, after an initial period of destruction of historic monuments, contributed to the establishment of the first legislative protections of antiquities and influenced both the universal reevaluation of historical structures and the assumption of cultural past as a social good. This counterapproach placed a theoretical emphasis on the material authenticity of monuments, the identification of their original materials and, as the *Conseil des Batiments* recommended in France (1807), their preservation in the condition in which they were found, without any changes except those needed to strengthen their structure and provide the greatest durability over time (Jokilehto 1986: 233). Furthermore, in 1832 the architect Quatremère de Quincy emphasized the need to preserve ruins with an educational aim and advocated the filling-in of missing sections in a simplified way (Quatremère de Quincy, *Dictionnaire*, in Jokilehto 1986: 233; see also Ruprecht 2014).

In the mid-nineteenth century, however, the amateur architect–restorer E. Viollet-le-Duc presented interpretive overrestorations of medieval buildings in France. He created a “purist” approach that combined historical fact with creative modifications, including the removal of post-original, often disparate additions or repairs, to achieve a stylistic unity within the building. As an outspoken critic of eclecticism, he advocated a rationalist approach to architectural history by putting himself “in the position of the original architect” and, in fact, defined “restoration” in his *Dictionnaire Raisonné* as “the reconstruction of a building to a state of perfection, which in the past was perhaps never achieved” (Viollet-le-Duc 1866: 14; Viollet-le-Duc [1854] 1990: 195; Denslagen 1994: 105, 139). The protection of historical buildings was confused with stylistic “repairs” meant to create morphological clarity and consistency of architectural order. With similarly exclusive principals, the Greek Revival of the late eighteenth and early nineteenth centuries, characterized by its emphasis on the architectural styles of the Greek Classical period, advocated a strict purist approach to stylistic clarity (see [Chapter 34](#)). This neoclassical approach, showing an “extreme antiquarian fidelity” to the Classical period (Summerson [1963] 1996: 93), had a strong and energetic influence on how the nascent Greek state would manage its antiquities.

Although the purist ideological orientation reflected the main stream of preservationist thought during the nineteenth century, alternative viewpoints were also gaining ground. Many contemporary scholars praised the restoration of the Arch of Titus in Rome (1818–1821) (Jonsson 1986: 99; Casiello 1992b: 37–44), but Raffaele Stern and Giuseppe Valadier’s method of dismantling and rebuilding the ancient structure, while filling in its missing parts, put into question the authenticity and historicity retained by a monument after this kind of intervention (Denslagen 1994: 31). While the “essence of History,” as opposed to the “nature of Art,” became the main dispute of the era (Bell 2009: 57), Alois Riegl recognized “the ultimate value in human artifacts as

documents of an irretrievable stage in the evolution of history” (Riegl [1903] 1998; Forster [1982] 1998: 24). Ruinous ancient buildings were seen as works of art – with every disfigurement to their form being accepted and preserved.

Actual efforts to implement such diverse principles, which emphasized education, stylistic clarity, historical consistency (or inconsistency), and material authenticity, proved extremely difficult. This was especially true in defining the lines between artistic and historical values. For example, if a building were still in use, it could be subjected to extensive “renovations” in accordance only with aesthetic rules, thereby destroying perhaps much of its historical evidence. Such confusion led to conflicting attitudes concerning restoration practices and gave rise in Britain to the extreme, anti-restoration movement of William Morris (Morris 1877: SPAB Manifesto), which recognized the “rights” of historic relics not to be disturbed at all with any kind of restoration but instead to be allowed a decent “death” (Ruskin [1880] 1989: 196–197). In Italy, this contrasted with the promotion of the “scientific” (or “archaeological”) approach of Camillo Boito and Gustavo Giovannoni to restoring monuments that included consideration for the historical urban setting and qualities of authenticity and historicity (Ceschi 1970: 107, 111; Giovannoni, in Zucconi 1997: 100). This approach also influenced the Greek restorers of the late nineteenth and twentieth centuries.

Greece and the Preservation of Its Historical Remains

The foundation of the Greek state in 1827 was marked with a great change in the general attitude toward the antiquities of Greece. Because of the Ottoman occupation, Greece had missed the evolution of European preservationist thinking and was directly introduced to a late stage of neoclassicism. The first king of Greece, the young Otto von Wittelsbach (son of King Ludwig of Bavaria) and his court were animated by a strong philhellenic spirit, in accordance with German Hellenism, or a with neohumanistic Graecophilism (Marchand 1996: 3, 5), and they sought to refocus Greek national identity through a deep appreciation for classical antiquity. The architectural and artistic remains of the Greek Classical period, in particular, were considered the only antiquities worthy of attention, while the ubiquitous traces of the Roman era were considered of minor value, let alone those of still later periods. This classical-centrism cultivated in the consciousness of modern Greeks the idea of an unbroken continuity with the golden age of Periclean Athens and encouraged a selective attitude among Greek authorities regarding *which* antiquities to save.

Aesthetics of “purity” were clearly the main factor in the planning of

interventions on ancient ruins and promoted stylistic restorations through the clearing away and removal of most post-Classical remains (Chlepa 2011: 52). Medieval structures, in particular, which were associated with an historically “painful” or dishonorable part of the nation’s past (e.g., the Frankish tower on the Acropolis, whose removal was paid for by Heinrich Schliemann in 1875; Kokkou [1977] 2009: 114) were demolished so as to unveil the monuments’ Classical phase, in response to contemporary demands for stylistic clarity (Kokkou [1977] 2009: 112; [Figure 35.2](#)). Archaeological sites were reserved only for restoration and research, not other modern uses.



Figure 35.2 Th. du Moncel, “The Propylaia with the Frankish Tower and Athena Nike temple restored by Ross,” 1843.

Source: Du Moncel 1845. Reproduced by kind permission of Gennadeion Library, American School of Classical Studies in Athens.

By the early 1840s the prevailing view toward the preservation and elaboration of Greek antiquities had entered a practical stage. The term “anastylosis,” or the putting back of fallen architectural members onto their original building, had not yet been coined; it was only introduced and adopted into common usage a century later. Instead, Greece’s intensive interventions were described as either “a new erection” of the monuments, “renovation,” or “the erection or completion of the antiquities.” Furthermore, the monuments “should be erected in their ancient position and form” (Rangavis 1837).

At the same time, voices arose opposing all such intensive interventions in Greece, primarily from British commentators, antiquarian circles, and intellectuals, including William Mure, who argued that extended reconstructions, even using fallen authentic material, would destroy the

historicity of the ruins (1842: 67). They proposed a romantic approach to the monuments, with minimal intervention to the historic scenery, which foreshadowed the anti-Restoration movement. These ideas did not gain traction, for they were not compatible with the neoclassical spirit of the Bavarian court and its need to manage the ancient monuments for the glory of their king. For Greece, the idea of resurrecting the ancient relics was politically connected with the symbolic resurrection of the Greek nation (Jokilehto 1999: 89).

Prominent figures such as architect Leo von Klenze, a powerful counselor of King Otto, formalized the first scientific principles for the management of ancient relics in Greece. The launch of the Acropolis interventions was characteristic of the Romantic spirit of the day. On September 10, 1834, von Klenze organized a festival, presided over by King Otto, to celebrate the start of the “reerections” on the Acropolis. The king was to be seated on a wreathed throne in the middle of the Parthenon’s cella. For this occasion, Otto was to reset (symbolically) one of the fallen column drums of the Parthenon’s partially collapsed north colonnade (von Klenze 1838: 382–383; Papageorgiou-Venetas 2000: 166).

The most important restoration of this period was the total reconstruction of the nearby Classical Temple of Athena Nike in 1835–1836, by archaeologist Ludwig Ross and architects Christian Hansen and Eduard Schaubert, which relied mostly on the original material of the temple (Ross, Schaubert, and Hansen 1839: 3; Kavvadias and Kawerau 1906: 7; [Figure 35.2](#)). The building had been dismantled by the Ottoman Turks in 1687 and its members built into the Acropolis’ fortification walls. Ross reconstructed most of the temple by demolishing these walls and gathering the building’s ancient material. He used poros and marble for the in-fill of damaged ancient members, without carving any decorative details. Also, in keeping with the practices of the era, no consideration was given to resetting the ancient members in their original positions on the building (Giraud 1994: 77). The reconstruction of the Athena Nike temple was the first anastylosis of a Greek Classical monument of the fifth century BCE that gave material expression to neoclassical ideals for the restoration of ancient monuments (Mallouchou-Tufano 1998: 282).

In 1842, amateur archaeologist Kyriakos Pittakis took charge of operations on the Acropolis. Already since 1837, Pittakis produced empirical interventions on the Acropolis monuments that lacked any systematic study or documentation of the buildings and were described as “unmethodical and by chance,” even by Pittakis’ own collaborator, archaeologist A. Rangavis (Mallouchou-Tufano 1998: 45). Pittakis reset parts of the flanking colonnades and parts of the flanking walls of the Parthenon’s cella, reinforcing the northern one with a massive brick wall. In the Erechtheion, he reconstructed the cella walls using fired bricks to fill gaps between the wall stones (Balanos 1940: 37). In the Parthenon, missing portions of the columns were filled in

with brickwork in a simple cylindrical form without following the shape of the fluting. In both buildings, Pittakis placed architectural members randomly, without regard for their original positions but according to their state of preservation.

Pittakis' use of brickwork was similar to the method then being employed in contemporary Italian interventions on ancient Roman buildings in Rome, and especially on ancient Greek temples in Campania and Sicily, where machine-made bricks were selected because of economic restrictions (Valadier 1833, in Jokilehto 1999: 85, Mallouchou-Tufano 1998: 288, note 751). Afterward, the negative assessment of this first anastylosis on the Acropolis, Pittakis' amateurism, and the lack of a scientific approach and technical expertise led to a significant change in the choice of restorers for the next phase of interventions.

From an Empirical Approach to an Ideological One

A new era for the Acropolis preservation works began in the late nineteenth century with the interventions of Nikolaos Balanos, a civil engineer trained in Paris. Balanos originally came to the Acropolis after the earthquake of 1894 to repair the Parthenon's west side and the west porch of its opisthodomos. He stayed on to restore other Acropolis monuments and gained enough influence to become the sole authority on the Acropolis restoration works for almost forty-four years (Mallouchou-Tufano 1998: 251). His involvement on the Acropolis between 1898 and 1939 was distinguished by an invasive methodology. With his arrival, archaeologists had given way to engineers, who were trained in construction but lacked any kind of archaeological background. Yet this employment of Greek engineers and technicians established a new scientific standard for the structural and static strength of the ensuing twentieth-century interventions.

Balanos' approach was greatly influenced by his French training and the echoes of neoclassical ideals for monumental interventions, while he also incorporated ideas from the Italians' "archaeological" approaches and their acceptance of reconstructions using an ancient structure's original material. Furthermore, Balanos was aware of the British anti-restoration movement that promoted new techniques and consolidation of materials, in order to safeguard the authenticity of the historic fabric.

Characteristic of Balanos' Acropolis interventions was the use of methods derived from contemporary construction techniques which, unfortunately, were not previously tested on ancient monuments. Balanos attempted to resolve the Acropolis monuments' static problems and aesthetic problems from the initial restorations by making extensive reconstructions and

completing parts of the Acropolis buildings using their scattered material. He would even saw off the ends of two different ancient blocks and join them together (Balanos 1940: 30). As Alexandros Papanikolaou astutely noticed “the ancient material was the excuse for the monuments’ recreation” (Papanikolaou 2012: 76).

Balanos, following the then current French constructional technique of hiding reinforcements within the material of a structure, embedded strong metal beams inside the original marble of the Acropolis’ ancient buildings, a technique he first attempted in reinforcing the marble beams of the Erechtheion’s Caryatid Porch in 1909 (Balanos 1940: 49; Mallouchou-Tufano 1998: 128).

He also chose the innovative and extremely durable iron-reinforced concrete to fill in the missing parts of architectural members, within the marble setting. In this, he introduced new problems, because he overestimated the resistance of concrete to moisture and weathering. Over time, cracks or open joints in the ancient material, and the lack of any sealant, provoked the penetration of atmospheric moisture and corroded the internal iron reinforcements. The expansion of the corroded iron elements, in turn, caused cracking within the marble fabric: the blocks failed and began to fall apart. Balanos’ approach to the monument from a purely constructional perspective may indeed have solved the complex problem of static durability of the restored, heavy members but it also demonstrated an astonishing ignorance of the negative impact that his new materials could provoke by combining them with the ancient fabric.

Another controversial aim of Balanos’ interventions, which was announced hypothetically but not accomplished practically, was the precise identification of the original positions of the monuments’ scattered members. The principle of restoring ancient architectural members to their original positions on a building had long been a goal of archaeologically minded architects. As a technique of restoration, it had been promoted previously by Italian restorers and was initially advocated in Greece by the French archaeologist Théophile Homolle in 1905 following his successful experience with the anastylosis of the Treasury of the Athenians at Delphi (Homolle 1905: 168). Other pro-restoration French specialists, including the architect Lucien Magne, called for extensive restorations in accordance with ancient building methods, such as dry-stone masonry joined with metal clamps (Magne 1905: 22; Kavvadias 1905: 246; Balanos 1940: 89). Balanos did try to apply this principle on the Acropolis monuments. Balanos’ misplacement of column drums and entablature members was another severe failure.

Although Balanos’ praises were sung by attendees of the International Congress of Archaeology in Athens (1931) and in the Athens’ Charter of 1931, very soon a backlash arose against his interventions, with acute criticism of his choice of materials (Choay 2002: 109). Forty-five years later,

the effects of Balanos' corroding iron reinforcements and clamps on original architectural members, and the serious damage this caused on the Acropolis, made the matter urgent. Greek cultural authorities decided to start new anastyloses on the Acropolis starting in 1977 (Bouras 1994b: 329). The negative impact of Balanos' restorations required a new approach, with high technical competency, to be planned and executed by multidisciplinary scientific teams.

The Ideology behind Modern Anastylosis

The present-day restorations on the Acropolis began immediately after the restoration of the new Greek Republic in 1976. If we consider that similarly the very first Acropolis restorations in the 1830s began following the foundation of the new Greek state, it seems that the Sacred Rock is a timeless beacon of Greek democracy as well as an ultimate symbol of the nation's rebirth. The modern principles of restoration in Greece in the post-World-War-II era are based on international charters, especially the 1964 Venice Charter on historic structures (Icomos I 2004: 37). Interventions promoting only the aesthetic values of a monument are condemned, while an "honesty" with regard to materials and methods is advocated for the internal, as well as the external fabric of an historic structure. This respect for the structural system and authentic material of a building, even in unseen areas, which surpasses neoclassical aesthetic ideals, has evolved through the modernist architectural movement, calling for "honesty" and "material justice" (Petzet 2004: 28). Relevant reversibility of the interventions is also of high priority, while new materials should escort the ancient not the reverse (Bouras 1983: 410).

Since the current impulse is to intervene, not simply to preserve historic structures as they are, the extent of proposed interventions continues to be debated. The use of new material in extensive additions has become more and more commonplace as part of an educational approach to architectural preservation at archaeological sites all over Greece: numerous ancient buildings have been reconstructed using much modern material. In a post-modern society the three-dimensional reality of an historic building seems to be more attractive to the non-specialist public, for whom, ultimately, the monuments are being reconstructed. Scientific advances in materials and techniques have given restorers new confidence and pushed restorations beyond ideological limitations that were meant to safeguard the management of the romantic nature of historical ruins.

Today's audiences want archaeological sites to be more experiential. Ambitious restorers have taken the place of conservative archaeologists in part to meet this demand. The latest international conventions, exemplified by

that at Victoria Falls, Zimbabwe in 2003, have advocated a less rigid approach, even in questions of reversibility – considered now as repeated “reparability” (Victoria Falls Charter 2003: 3.9; Petzet 2004: 26) – and interventional extent, while also promoting the preservation of the natural or cultural sentiment, authentic spirit, and feeling of an historic setting (Burra Charter 1979: Article 2.2; Nara Document 1994: 13; Victoria Falls Charter 2003: 1.2).

In accordance with current ideas for cultural interventions, contemporary restorers on the Acropolis have had to consider a number of now familiar questions (Bouras 1994a, 102), including Which phase do we restore? What is the preferred static strength we want to give the Acropolis remains? For whom do we restore? What method do we use and to what extent do we proceed? And how reversible is our intervention? Balanos’ intensive, invasive, irreversible restorations had a tremendous negative impact on subsequent interventions and still today mark the starting point for any modern attempt at preservation and restoration (Bouras 1983: 413). Some of the questions come too late for the Acropolis: with the appropriation of the hill as an archaeological preserve and the consequent cessation of its practical history, the Acropolis ruins now exist only in a static, post-historical, *de facto* situation. Balanos established a tradition of interventional techniques with both positive and negative aspects that, as an irreversible part of the buildings’ histories, have proved impossible to ignore.

The restoration of the Parthenon provides an opportunity to study more closely some of the issues surrounding modern reconstructions. The immediate aim of interventions on the Acropolis since 1980 has been to restore Balanos’ restorations, while also resetting newly identified scattered fragments in their original positions on the monuments (Bouras 1983: 403). In general, the goal of the interventions is the partial reconstitution of the Acropolis buildings’ original forms, with an acceptance of their traditional character as ruins. Attention is also paid to the ancient buildings’ structure and the restoration of their static strength. The new interventions, like those of Balanos, have been extensive operations, although they use totally different technological means. They pose a new set of priorities and a different approach to aesthetics. Although the current work makes use of modern technology, just as Balanos exploited the technology of his day, they focus on interpreting the ancient structure only after a very detailed documentation, in accordance with archaeological methods, and after determining the static efficiency of the existing buildings. The goal is to ensure authenticity while improving structural integrity (Venice Charter 1964: Article.3; Victoria Falls Charter 2003: 3.5).

The incorporation of titanium reinforcement rods into the ancient material follows the previous restoration’s principle of hiding reinforcements within the ancient members. The major difference between Balanos’ intervention and

the contemporary one, however, lies in the improved quality of modern materials and techniques. Marble has been used exclusively for any new additions, while titanium, which studies show has an excellent compatibility with marble, has replaced iron for the internal reinforcements and clamps (Skoulikidis 1972: 41). Other differences include the idea of relevant reversibility of the interventions (Bouras 1983: 411), or repeated “reparability,” with the least possible sacrifice of ancient material during the internal reinforcement of the members (Venice Charter 1964: Article 9). The buildings on the Acropolis are being preserved as ruins, but they also are being restored to the most statically sufficient form that their remaining ancient material allows, so as to obtain a state of “preventive maintenance” (Victoria Falls Charter 2003: 3.2).

A Case Study: the East Porch of the Parthenon

The east porch of the Parthenon was the main entrance to the Classical fifth-century BCE temple’s large, central chamber (naos), in which stood the enormous gold-and-ivory cult statue of the goddess Athena. The porch consisted of six Doric columns and an entablature along the top of which ran the famous Ionic frieze of the Panathenaic procession (Figure 35.3). During the incident known in contemporary archaeological literature as the “ancient fire” of the third or fourth century CE, some seven or eight centuries after the Parthenon’s construction, the columns of the pronaos lost a significant part of their surfaces that faced the temple’s interior, including major portions of their western flutes. In this mostly fluteless, cracked, fire-damaged form, and with its two, central-most columns incorporated into the apse of the Christian church installed in the Parthenon in the sixth century CE, the pronaos continued relatively intact and survived the passage of time until the end of the seventeenth century. Then came the disaster of 1687, when a Venetian artillery shell struck the building during the siege of the Acropolis by the Venetian forces (Paton 1940; Ivanovich 1974: 124–128; Korres 1994: 138–161; Beard 2002: 76). The central area of the Parthenon was severely damaged, along with the middle sections of the two flanking colonnades of the peristyle and the flanking walls and roof of the building (Figure 35.4). In addition, five columns of the six-column pronaos collapsed and, because they had already been damaged long previously by fire, especially on their inner sides, they disintegrated into dozens of loose fragments.

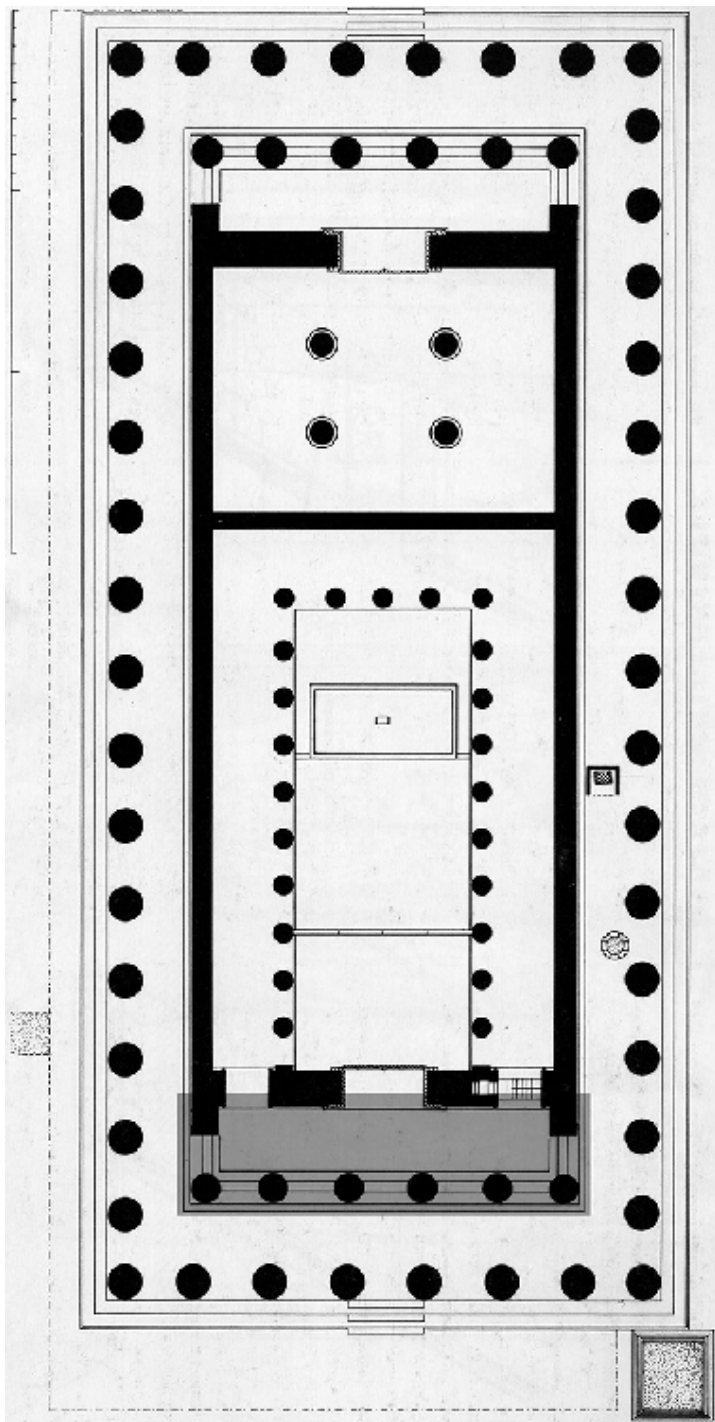


Figure 35.3 Parthenon, Athens. Pronaos indicated in grey.

Source: M. Korres (by permission of artist).



Figure 35.4 Pronaos before any restoration, 1930.

Source: Balanos 1940, pl. 133.

The destruction of much of the east wall of the cella and five of the six columns of the pronaos was to some extent repaired through a partial anastylosis of these areas by Balanos in the early twentieth century (Balanos 1940: 118–119). The more recent partial anastylosis of 1998–2004 by the Greek Ministry of Culture’s Acropolis Monuments Restoration Service (YSMA) followed a proposal of Manolis Korres in his 1989 study of the pronaos, in which he called for partial restoration (Korres 1989: 13–99; [Figure 35.5](#)). This intervention set many newly identified fragments in place and gave the east area of the Parthenon a distinctly new, aesthetically different form. The work on the east porch was not intended to be a rescue intervention, as were other interventions on the Parthenon (such as the rescue restoration of the middle eight columns of the north colonnade (Lambrinou 2005b)), but instead aimed to reset many of the pronaos’ scattered fragments in their original places to improve the comprehensibility of that part of the monument.

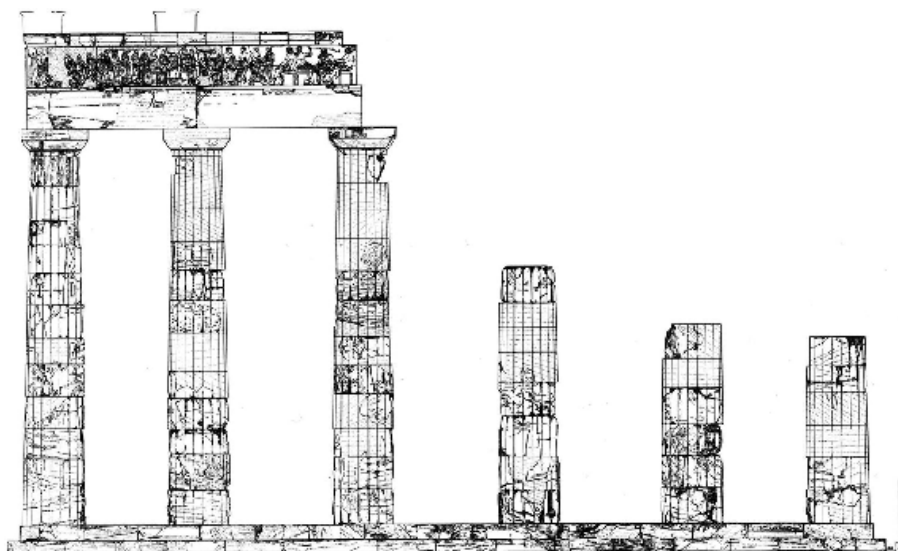


Figure 35.5 Korres’ proposal for partial restoration of Pronaos, 1989.

Source: Korres, YSMA Archives.

Background to Decisions Governing the Restoration of the East Porch

An important consideration in the efforts of 1998–2004 was always to allow for future reexamination. The initial decision to proceed made in 1990 by the Committee for the Restoration of the Acropolis Monuments (ESMA) was the first stage in what was hoped would be a definitive solution for the pronaos (ESMA 1990: 23), but the idea of settling the problem was lost in subsequent

debate. Disagreement about the final form of the surfaces of the new fillings to be installed in the columns of the pronaos, however, led to postponement of the decision to proceed until 1994, when a supplementary study was made by Ch. Bouras. The 1994 study proposed leaving the intended marble in-fillings of the column drums *unfluted*, with the result that the in-filled parts would appear as simple, partial cylinders. This choice had as its precedent a similar decision made by architect Anastasios Orlandos during the reconstruction of the Hephaisteion's east-porch columns in the 1930s (ESMA 1994: 2; Mallouchou-Tufano 1998: 236). One key advantage of Bouras' 1994 proposal was the allowance it made for the possibility of future fluting of the columns; that is, after the work was completed, it would be possible to reconsider the matter of the reconstructed columns' omitted flutes and to decide whether to proceed with fluting (ESMA 1994: 2). This new 1994 solution for the pronaos, endorsed at the time as being fully reversible, effectively postponed the problem of choosing the final treatment of the columns' surfaces until the following decade.

Procedural and Historical Concerns

Discussions on how the pronaos should be restored have been taking place since before the mid-1990s. This relatively far-reaching intervention had no precedent among previous modern work on the Parthenon. It therefore elicited a variety of objections concerning the acceptance of such a drastic change to the long-familiar form of the monument, even if such a change were to be documented in detail. A conference held in Athens in April 1989 solicited the international scholarly community's opinion on the extent of the Pronaos' intervention. A questionnaire was circulated and, although they did not influence the final decision, most responses favored the choice of the most extensive intervention (Committee for the preservation of the Acropolis monuments 1990: Ap. II).

The case of the pronaos also illuminated a general problem in restoration practices: the need to harmonize the different theoretical and philosophical perspectives of the various specialists involved in restoration, including the aim and extent of the work. These different perspectives led to disruptive, unresolved oppositions that almost rendered impossible any realistic solution for the monument. The main concerns in 1990 were the questions of total versus partial restoration of the pronaos and the acceptable quantity of new marble to be introduced. The greatest concern, however, seemed to be the unresolved problem of what the final form would look like: would the columns be fluted or unfluted?

Contemporary interventions on the monuments of the Acropolis are primarily rescue works, in the sense that they give preference to repairing or replacing

Balanos' previous anastyloses (Bouras 1983: 401). This approach has the advantage of relaying on a precedent that has already determined the extent of interventions to be undertaken on sections of the Acropolis monuments and has led to the establishment of the monuments' now familiar images. For example, Balanos had already reerected the partially collapsed north colonnade, fallen in the Venetian bombardment of the late seventeenth century, using mostly original material. He did this despite 18 years of heated oppositions, especially from architect Anastasios Orlandos (1922: 97; Balanos 1940: 104; Mallouchou-Tufano 1998: 182; Lambrinou 2012: 55). The north colonnade's fully reerected form, inherited by present-day restorers, has long been considered aesthetically acceptable, thus making it easy to embrace and difficult to reverse. These restored images are result of the decision to reerect, rather than simply conserve, made from the very beginning of the restoration efforts on the Acropolis in September 1834. Contemporary proposals that include changes to the familiar monument still face challenges because disagreement remains among specialists over the fact that the present image of the Acropolis monuments is to a great extent the product of earlier, nineteenth- and twentieth-century restorers rather than of any previous historical process.

Although the idea that no drastic change should be made to the inherited image of the Acropolis ruins has been accepted as a basic principle of modern anastylosis (Venice Charter 1964: Article 5, 13; Bouras 1983: 412), in practice this should not become a brake on efforts to enrich their architectural value. Rather than being limited to simple conservation of the ruins, contemporary Acropolis interventions aspire to reincorporate newly identified fragments. The Acropolis monuments are approached as architectural creations, not simply as inherited, "desiccated museum exhibits" (Watkin 1994: 210). In this sense, the purpose of resetting newly identified members within the buildings is to give the buildings their fullest and most recognizable form, whether or not this upsets their established image. Thus, the current efforts being made on the Acropolis are intended to improve its monuments both aesthetically and pedagogically. It should be evident, nevertheless, that every intervention on an Acropolis monument leads to a new, non-historical, albeit reversible image of the monument. This a priori cost to the monument's existing image is considered to be balanced by the resulting gain in comprehensibility, as well as by the rescue of previously scattered ancient material through its incorporation into the monument. The term "rescue" is employed here because the architectural members scattered on the ground are fragmentary, not suitable for exhibition and not easily understood on their own. Restored to their original positions on the monuments, however, they regain their primary role and clearly contribute to the buildings' completeness.

Preservation of Historical Evidence

In every anastylosis undertaken on the Acropolis, the basic premise is that a monument's historical evidence will be safeguarded and preserved (Venice Charter 1964: Article 9). Ultimately, all traces visible on a building's architectural members, whether random or intentional, including the fractured areas of any partly preserved members, can be considered as historical evidence. When an intervention is based on the in-filling of fragmentary members, however, the preservation of all random traces on this architectural material cannot be set as a top priority, since the setting of such a strict guideline would be self-contradictory to the intended purpose: it would actually prevent any in-filling of architectural members if their fractured surfaces became covered and irretrievable. On the Acropolis, the contradiction is resolved by preserving the traces that mark the original construction of the building, or subsequent historical events such as repairs, additions and conversions. Furthermore, any in-filling is only considered necessary when it is judged to contribute to static efficiency and to the overall stability of the entire structure.

In the Parthenon's east porch, the western, inward-facing, fire-damaged surfaces of the pronaos' column drums fell away from the upper areas of the columns when they collapsed in the seventeenth century, but those surfaces are largely preserved in the lower drums of the columns still *in situ* (Korres 1989: 75; [Figure 35.5](#)). Besides the intrinsic significance of the pronaos as the ancient entrance portal, the fire-damaged parts of the temple also survive as exemplars that attest to the severe damage caused by the ancient fire. Yet through the vicissitudes of time, the identified fallen drums did not retain any fire-damaged areas; thus, the decision was made in 1989 to cover some ancient surfaces with new marble. Those selected for this "completion" were chosen because without it they would have lacked adequate static efficiency for anastylosis.

As historical evidence, ancient mortises cut in the sides of the columns, which served for the attachment of intercolumnar screens, and traces of coarse carving (with a pointed tool) on the two middle columns, where the Byzantine apse was once attached, have not been concealed by new in-fillings. The result, however, was a discontinuity in the forms of in-fillings and a somewhat inharmonious final aesthetic result.

Historical Inconsistency

An intervention, while beneficial for a monument's continued survival or comprehensibility, nevertheless represents an interference, or interruption, in the course of the history of an ancient structure. Historical inconsistency is

inherent in the very idea of preserving the ruins of ancient monuments, that is, in consolidating them at some particular chosen moment, or stage, in their history (e.g., at the stage of their ruination). Such conservation of historical monuments, as Stubbs states, amounts to the “art of controlling change” (2009: 121). The form of the building that we recall by means of anastylosis represents a selective remodeling of the building using some of its fortuitously preserved parts. This remodeling effort cannot be termed a “return” to a previous historical phase of the building, since the intervention tends to negate its historical authenticity (Burra Charter 1979: Article 1.7–1.8; Feilden in Committee for the preservation of the Acropolis monuments 1990; Lambrinou 2010: 65).

Anastylosis is a fully acceptable procedure, nevertheless, when principles based on specialized experience and international agreements are respected (Athens Charter 1931: Article VI; Venice Charter 1964: Article. 15; Petzet 2004: 24). Anastylosis is clearly an historical act, in the sense of it producing an irreversible change and a historically new image of the building undergoing intervention. Interventions should be considered legitimate only when they have adhered to the form of the original structure and have worked toward its beneficial preservation.

Which Historical Phase to Restore?

The suggested contemporary approach to anastylosis, according to the charters, is to accept the importance of all historical phases of a building (Venice Charter 1964: Art. 11). In practice, however, such a broad approach proves difficult to follow, since it requires different priorities. In the case of the Parthenon, post-classical alterations made to the building through the centuries were relatively limited, and most of their physical traces were removed in the nineteenth and early twentieth centuries. Any contemporary anastylosis of the building is therefore ultimately constrained to focus on the original, Classical temple rather than its various re-uses.

For the pronaos, the question of which historical phase to restore was posed differently. Here, a dilemma eventually led to the unusual decision in 1994 not to carve the flutes of the new marble used to fill in the columns. The western flutes of the Classical pronaos columns, as already noted, had only survived for eight centuries, whereas the columns themselves, although partly defaced by the ancient fire, had survived for an additional fourteen centuries. In particular, the dilemma over desired appearance amounted to whether the original, briefer, Classical phase with fluted columns should be restored or the historically longer phase with fluteless columns – that is, the late-Roman-through-seventeenth-century phase. Should the pronaos intervention be guided by aesthetic or historical priorities? Should we showcase the architecture of

the building or its history? If the historically longer phase is designated the more important to preserve (deemed more important simply because it lasted longer), the major question then would be how to present this phase physically: what should the inner, western sides of the columns look like?

As this question was discussed, various ideas were advanced (and some experiments were conducted) about the best way to reproduce the fire-damaged appearance of the drums through artificial destruction of the surfaces of the new marble in-fillings so that they would appear to have suffered thermal fracture. But that would have produced merely an artificially contrived imitation, reminiscent of a stage set, which attempts to convey the chance result of an historical event.

According to the principles of the Venice Charter and other international agreements governing restoration, such scenographic approaches are discouraged, since the newly added, theatrically doctored material leads to a deceptive representation of the structure's form that may be chronologically confusing and which ultimately promotes "an historical forgery" (Venice Charter 1964: Article. 12; Dontas 1996: 15). Present-day restorers should not imitate the effects of the physical process of change on the members nor artificially reproduce the history of the building; instead they should reconstruct the building as an architectural work. An intervention should not present the fortunes of the building's members as a three-dimensional narrative. An intervention is optimal only when it corresponds fully with the authentic construction (and deviates only for justifiable structural reasons). No other form is acceptable but the original, as long as restorers can reconstruct that original form faithfully (Bouras 1983: 410). This guides the harmonious integration of new material into the ancient construction so as to enhance the comprehensibility of the building. There are only two isolated examples of deviation from restorational norms, which include the in-filling of a southeast corner triglyph on the Parthenon and of a block in the north wall of the Erechtheion, in which the new marble material was intentionally cracked to imitate the condition of the original members.

For the pronaos, the theoretical dead end (reached in 1990) concerning restoration aesthetics, was resolved in 1994 by side-stepping the problem – in accordance with a principle calling for simplistic reproduction of the decorative forms of historic structures, originally a characteristic of nineteenth- and early twentieth-century restoration attitudes (Quatremère de Quincy 1832; Boito 1893: 17; [Figure 35.6a](#) and [b](#)). The simplistic form, however, of the new columns' additions provoked an aesthetic, as well as historical, inconsistency. One could say that a phase was reproduced of the constructional procedure slightly before the final step in the original process, which was the carving of the flutes after the erection of the columns. This decision was carried out, despite the certain knowledge that the columns in fact had been completed with flutes in the fifth century BCE. Thus some parts

of the pronaos look unfinished, as they were for a short while, only three or four years at most, in the 430s BCE before the temple was finished ([Figure 35.7](#) and [Figure 35.8](#)).



Figure 35.6a Bouras' proposal for partial restoration of Pronaos 1994, East elevation.

Source: Korres-Bouras-Eleutheriou, YSMA Archives.

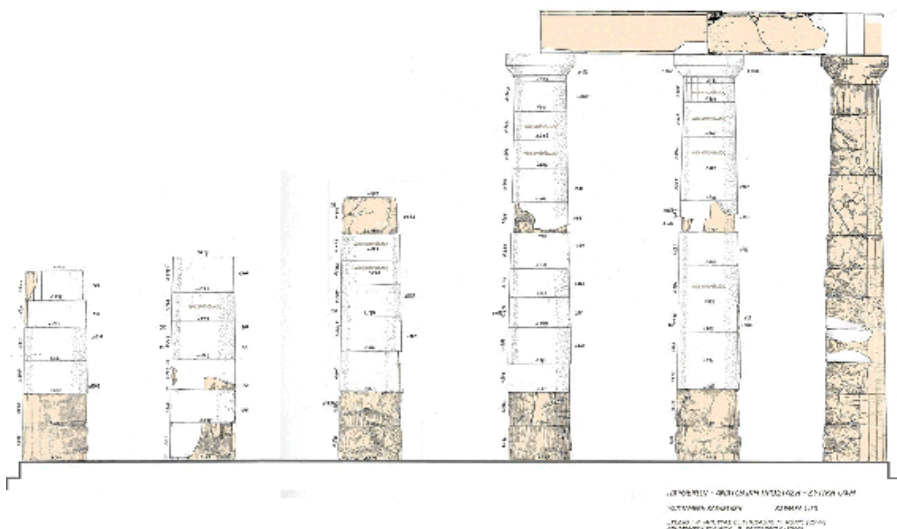


Figure 35.6b Bouras' proposal for partial restoration of Pronaos 1994, West elevation.

Source: Korres-Bouras-Eleutheriou, YSMA Archives.



Figure 35.7 Implementation of Korres-Bouras' proposal for partial restoration of Pronaos 2004, view from southeast.

Source: L. Lambrinou.



Figure 35.8 Implementation of Korres-Bouras' proposal for partial restoration of Pronaos 2004, view from northwest.

Source: L. Lambrinou.

A New Approach to the Pronaos Restoration

As soon as the approved anastylosis of the pronaos was completed in 2004, the obvious aesthetic asymmetry of the restored columns in the Parthenon's east porch once again raised the question of the final form of the new, western in-fillings. The new proposal of 2004–2005 called for the carving of the flutes (Lambrinou 2004; Lambrinou 2005a). The fluting represents an important element of the column's morphology integral to the character of the Doric order, and can hardly be called a decorative element. The carving of the flutes could also reverse the historical inconsistency still apparent in the restored columns of the pronaos: why should the columns look unfinished, when the temple was fully finished in antiquity (Figure 35.9)?

It was proposed that the fluting operation be undertaken using a mechanical cutter (with finishing by hand), a course of action intended to reduce the amount of time required for the operation but which required the dismantling of the restored columns. The choice of mechanical over manual carving was not based on any weakness of traditional techniques but on an attempt to expedite the works (in one year).

After new delays, another proposal in 2009 was finally approved (Lambrinou and Eleutheriou 2009). In a positive step forward, final approval for the full carving of the new marble additions in the columns of the pronaos was passed by the Central Archaeological Council (KAS) in late July 2009. According to the Council's decision, the fluting must be achieved by hand and *in situ*, without any dismantling, and it will take 3.5 years. The fluting of two columns (first and second from the north) was completed at the end of 2015. Additional fluting is planned for the remaining new marble additions (third–fifth columns from the north; the sixth is completely original), in the coming years. The acceptance of the flutes' full carving addressed all significant theoretical, historical, and practical matters and may at last bring a long-standing debate to a definitive close.



Figure 35.9 Pronaos of Parthenon, view from southwest.

Source: L. Lambrinou.

Epilogue

The work on the pronaos demonstrates that aesthetic concerns are fundamental to the restoration process and illustrates the dynamic connection between these concerns and other theoretical principles of restoration applied to ancient monuments, such as the preservation of its historical evidence and the extent of an intervention. The discord and resulting inconsistency over the pronaos underscores the importance of Articles 9 and 12 of the Venice Charter, which advocate a harmonious interaction of the new and the old as an important element of any intervention process for the restoration of historical buildings.

Restorations of the Parthenon have been guided by fundamental principles established more than one hundred and seventy years ago, before any intervention on the monument. In practice, they were not always strictly followed, because of the technical necessities or limitations of each era or the inability of successive restorers to manage them. The need to protect the monument's original material, preserve its historicity, and respect its ruined state were embraced by all restorers of the Parthenon, yet with basic differences in their interpretation and practical application. The previous, purely stylistic and aesthetic interventions on the Parthenon in the early twentieth century have matured into a more fully developed approach that shows greater respect for the structure and the original material of the building.

The rationale behind the new approach, echoing Article 11 of the Venice Charter, accepts the existing state of the Parthenon as a ruin and recreates a particular earlier state only in exceptional, well-justified cases. The current intervention in the pronaos has a small but significant role in the history of Acropolis interventions. Contemporary practices of preservation are the product of a rich history of changing values, but one value that has remained constant is that "preservation of a monument is the supreme principle" (Petzet 2004: 29). Just as Plutarch, writing in the second century CE, could have concluded about Theseus' wooden ship, believed to have been built originally in the heroic Bronze Age and still to be seen in Athens of the fourth century BCE: with the survival of monuments comes the survival of cultural history.

FURTHER READING

For the development of restoration ethics, with many instructive examples, historical sources and contemporary bibliography, Jokilehto 1999 remains an indispensable source. Stubbs 2009 offers a detailed look at current international attitudes towards conservation and restoration of historic

structures. On the history of Greek restorations of ancient monuments, see Mallouchou-Tufano 1998 (in Greek). Also informative for the modern restorations – through 1994 – is the overview provided by Economakis 1994. On restoration issues and the landmark 1931 conference in Athens, which produced the Athens Charter, the first restoration charter on ancient monuments, see Choay 2002. ICCROM – ICOMOS publications always provide valuable reading for restoration works on historic buildings around the globe, including the 2004 volume, in which Michael Petzet, a former ICOMOS International president, offers important insight into the philosophy of the conservation of historic structures. This same publication presents all the International Charters for conservation and restoration of historic structures. For a recent look at the latest restorations on the Acropolis, see the British Museum’s newly published conference volume, Bouras, Ioannidou, and Jenkins 2012. On the historic destruction of the Parthenon in 1687, an intriguing description can be found in Ivanovich 1974; and for the history of the building Korres 1994 and Beard 2002.

REFERENCES

Athens Charter 1931. *Icomos I*: 31–32.

Balanos, N. 1940. *Η Αναστήλωση των Μνημείων της Ακροπόλεως* [The anastylosis of the Acropolis monuments]. Athens.

Beard, M. 2002. *The Parthenon*. London.

Bell, D. 2009. “Naming of Parts.” In Stanley-Price and King, eds., 55–62.

Boito, C. 1893. *Questioni pratiche di belle arti, restauri, concorsi, legislazione, professione, insegnamento*. Milan.

Bouras, C. 1983. “Οι Σκοποί και οι Αρχές κατά την Επέμβαση στον Παρθενώνα” [The aims and principles of the proposed operation on the Parthenon]. In Korres and Bouras, eds., 401–422. English summary: 690–707.

Bouras, C. 1994a. “Current Problems of Restoration on the Acropolis.” In Economakis, ed., 100–105.

Bouras, C. 1994b. “Restoration Work on the Parthenon and Changing Attitudes towards the Conservation of the Monuments.” In Tournikiotis, ed., 310–339.

Bouras, C., M. Ioannidou, and I. Jenkins, eds., 2012. *Acropolis Restored*. London.

Bruno, V., ed. 1974. *The Parthenon*. Toronto.

Burke, E. 1757. *A Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful*. London.

Burra Charter 1979 – 1999 Definitions. *Icomos I*: 63–69.

Casiello, S., ed. 1992a. *Restauro tra metamorfosi e teorie*. Napoli.

Casiello, S. 1992b. “Problemi di conservazione e restauro nei primi decenni dell’ Ottocento a Roma.” In Casiello, ed., 30–44.

Ceschi, C. 1970. *Teoria e storia del Restauro*. Roma.

Chlepa, E.A. 2011. *Τα Βυζαντινά Μνημεία στη Νεότερη Ελλάδα, Ιδεολογία και πρακτική των Αποκαταστάσεων, 1833–1939 [Byzantine monuments in modern Greece, ideology and practice of restorations, 1833–1939]*. Athens.

Choay, F., ed., 2002. *La Conférence d’Athenes sur la Conservation Artistique et Historique des Monuments (1931)*. Paris.

Cipriani, M. 2004. *Il Restauro dei Templi di Poseidonia, Paestum*.

Committee for the preservation of the Acropolis monuments. 1990. *3rd International Meeting for the Restoration of the Acropolis Monuments, 31 March – 2 April 1989, Proceedings*. Athens.

Denslagen, W. 1994. *Architectural Restoration in Western Europe: Controversy and Continuity*. Amsterdam.

Diderot, D. 1755. *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers*. Lausanne.

Dontas, G.S. 1996. “Ομιλίες Δεύτερης Συνεδρίας των Εταίρων, Οι Ελληνικές Αναστηλώσεις” [The Greek restorations]. *Μέντωρ*, 37: 5–19.

Economakis, R., ed. 1994. *Acropolis Restoration, The CCAM Interventions*. London.

ESMA 1990. *Πρακτικά συνεδριάσεως Επιτροπής Συντήρησης Μνημείων Ακροπόλεως* [Proceedings of the Committee for the Restoration of the Acropolis Monuments]. Athens.

ESMA 1994. *Πρακτικά συνεδριάσεως Επιτροπής Συντήρησης Μνημείων Ακροπόλεως* [Proceedings of the Committee for the Restoration of the Acropolis Monuments]. Athens

Forster, K.W. [1982] 1998. “Monuments/Memory and the Mortality of Architecture.” In Hays ed., 18–38.

Giraud, D. 1994. *Μελέτη Αποκατάστασης του ναού της Αθηνάς Νίκης*

[*Study for the restoration of the Temple of Athena Nike*]. Athens.

Hays, K.M., ed., 1998. *Oppositions Reader, Selected Readings from a Journal for Ideas and Criticism in Architecture 1973–1984*. New York.

Homolle, T. 1905. “Le Trèser des Atheniens à Delphes.” *Comptes rendus du Congrès International d’ Archeologie*, 167–171.

Icomos I. 2004. *International Charters for Restoration and Conservation, Monuments & Sites I*. Rome.

Ivanovich, C. 1974. “An Eyewitness Account.” In Bruno, ed., 124–128.

Jokilehto, J. 1986. “A History of Architectural Conservation: The Contribution of English, French, German, and Italian Thought towards an International Approach to the Conservation of Cultural Property.” DPhil thesis, York.

Jokilehto, J. 1999. *A History of Architectural Conservation*. Oxford.

Jonsson, M. 1986. *La Cura dei Monumenti alle Origini, Restauro e scavo di monumenti antichi a Roma 1800–1830*. Stockholm.

Kavvadias, P. 1905. “La Question de la restauration des monuments et, en particulier, du Parthenon. ” *Comptes rendus du Congrès International d’ Archeologie*, 245–247.

Kavvadias, P. and G. Kawerau. 1906. *Η Ανασκαφή της Ακροπόλεως – Die Ausgrabung der Acropolis*. Athens.

Kokkou, A. [1977] 2009. *Η Φροντίδα για τις Αρχαιότητες στην Ελλάδα και τα πρώτα μουσεία [The provision of the antiquities in Greece and the first museums]*. Athens.

Korres, M. 1989. “Ο Πρόναος” [The Pronaos], in *Μελέτη Αποκαταστάσεως Παρθενώνος, Τ. II*, [The Study for the Parthenon’s Restoration, vol. II]. Athens. 13–91.

Korres, M. 1994. “The Parthenon from Antiquity to the 19th century.” In Tournikiotis, ed., 136–161.

Korres, M. and C. Bouras, eds. 1983. *Μελέτη Αποκαταστάσεως του Παρθενώνος [Study for the restoration of the Parthenon]*. Athens.

Lambrinou, L. 2004. *Pronaos: New Intervention, Carving of the New In-Fillings of the Drums*. Unpublished report (in Greek), YSMA, Athens.

Lambrinou, L. 2005a. *East Porch of the Parthenon’s Cella, Carving of*

the Columns' Flutes. Unpublished report (in Greek), YSMA. Athens.

Lambrinou, L. 2005b. *Repositioning of Architectural Members of the North Colonnade of the Parthenon, Columns–Capitals–Architraves*. Unpublished study (in Greek), YSMA. Athens.

Lambrinou, L. 2010. “Preserving a Monument, The Example of the Parthenon.” *Conservation and Management of Archaeological Sites* 12 (1): 60–74.

Lambrinou, L. 2012. “The North Colonnade.” In Bouras, Ioannidou, and Jenkins, eds., 49–56.

Lambrinou, L. and V. Eleutheriou. 2009. *The Restoration of the Parthenon's East Porch, The Carving of the Columns' Flutes*. Unpublished study (in Greek), YSMA. Athens.

Le Roy, J.D. [1758] 2004. *The Ruins of the Most Beautiful Monuments of Greece*. Translated by D. Britt. Los Angeles.

Lowenthal, D. 1995. *The Past is a Foreign Country*. Cambridge.

Magne, L. 1905. *La Conservation du Parthénon, Conférence faite le Mars 1905 a la Sorbonne*. Paris. 5–30.

Mallouchou-Tufano, F. 1998. *Η Αναστήλωση των Αρχαίων Μνημείων στη Νεώτερη Ελλάδα [The restoration of the ancient monuments in modern Greece]*. Athens.

Marchand, S.L. 1996. *Down from Olympus, Archaeology and Philhellenism in Germany, 1750–1970*. Princeton.

Middleton, R. 2004. “Introduction.” In Le Roy, 1–199.

Morris, W. 1877. *SPAB, Manifesto*. London.

Mortier, R. 1974. *La Poétique des ruines de France*. Paris.

Mure, W. 1842. *Journal of a Tour in Greece and the Ionian Islands*. Vol. II. London.

Nara Document on Authenticity 1994. *Icomos I*: 118–119.

Orlandos, A. 1922. “Pro Parthenone. Οι Ελληνικές Αναστηλώσεις” [The Greek restorations]. *Μέντωρ*, 37: 97–102.

Papageorgiou-Venetas, A. 2000. *Ο Leo von Klenze στην Ελλάδα [Leo von Klenze in Greece]*. Athens.

Papanikolaou, A. 2012. *Η Αποκατάσταση του Ερεχθείου (1979–1987), Η Απόδοση του Έργου (The Restoration of the Erechtheion (1979–*

1987), *Final Report on the Work*), Αθήνα.

Paton, J.M. ed. 1940. *Venetian in Athens 1687–1688, Istoria of Cristoforo Ivanovich*. Gennadeion Monographs I. Athens.

Petzet, M. 2004. “Principles of Preservation” *Icomos I*: 7–29.

Quatremère De Quincy, A. 1832 *Dictionnaire d'architecture*. Paris.

Rangavis, A.R. 1837. “Συνοπτική Έκθεσις της Τύχης των Αρχαίων Μνημείων εις την Ελλάδα κατά τα τελευταία έτη.” [Report on the situation of the ancient monuments during the last years in Greece]. *Archaiologike Ephemeris*, 10: 5–13.

Riegl, A. [1903] 1998. “The Modern Cult of the Monuments: Its Character and its Origin.” In Hays, ed., 621–653.

Ross, L., E. Schaubert, and C. Hansen. 1839. *Die Akropolis von Athen nach den neuesten Ausgrabungen, Abt. I: “Der Tempel der Nike Apteros.”* Berlin.

Ruprecht, L.A. 2014. *Classics at the Dawn of the Museum Era: the Life and Times of Antoine Chrysostome Quatremère de Quincy (1755–1849)*. New York.

Ruskin, J. [1880] 1989. *The Seven Lamps of Architecture*. New York.

Skoulikidis, Th., N. 1972. “Détérioration des Materiaux de Construction et Notamment des marbles par la Corrosion de l’ Acier Incorporé – Cas de l’ Acropole”, *Colloque international sur la deterioration des pierres en oeuvre. 1er. International symposium on the deterioration of building stones. 1st. La rochelle, 11–16 septembre 1972*, Athènes. 41–45.

Stanley-Price, N. and J. King, eds., 2009. *Conserving the Authentic: Essays in Honour of Jukka Jokilehto*. Rome.

Stuart, J. and N. Revett. [1762] 2007. *The Antiquities of Athens*. New York.

Stubbs, J. 2009. *Time Honored: A Global View of Architectural Conservation*. Princeton.

Summerson, J. [1963] 1996. *The Classical Language of Architecture*. London.

Tournikiotis, P., ed. 1994. *The Parthenon and its Impact in Modern Times*. Athens.

Venice Charter 1964. *Icomos I*: 37–38.

Victoria Falls Charter 2003. *Icomos I*: 162–178.

Viollet-le-Duc, E.E. [1854] 1990. *The Foundations of Architecture, Selections from the Dictionnaire Raisoné*. Translated by K.D. Whitehead. New York.

Viollet-le-Duc, E.E. 1866. *Dictionnaire raisonné de l'architecture française du XIe au XVIe siècles*. Vol. VIII. Paris.

Von Klenze, L. 1838. *Aphoristische Bemerkungen gesammelt auf seiner Reise nach Griechenland*. Berlin.

Watkin, D. 1994. “Restoring Symbolism.” In Economakis, ed., 210–211.

Watkin, D. 2005. *A History of Western Architecture*. London.

Zucconi, G., ed. 1997. *Gustavo Giovannoni, Dal Capitello alla Città*, Milano.

Glossary

abacus:

the square top of a Doric *capital* (Figure G.1).

akroterion, pl. akroteria:

an upright sculpture, floral or figured, fastened on the upper outside corners of buildings and the apex of *pediments* (Figure G.1).

adyton:

a back chamber in the temple, behind the *cella* (Figure G.3).

Aeolic:

an Archaic architectural *order* used in the northwest region of Asia Minor and occasionally elsewhere. The *capital* resembles a palm, with two pronounced, large *volute*s that spring from the center axis of the *column*.

anathyrosis:

a treatment of stone surfaces to ensure tight contact to adjacent blocks with economy of effort. A smooth contact band runs around the sides and top, and the center surface is roughly chiseled away.

annulet:

necking ring on a *Doric capital*.

anta, pl. antae, /in antis:

an anta is the thickened end of a wall, usually crowned with decorative *moldings*. *Columns* are “in antis” when they are positioned flush with the antae (Figure G.3).

antefix:

a decorated upright tile placed on the overhanging edge of a roof.

anthemion:

a representation of a flower or plant.

architrave:

the horizontal course that rests on *capitals*; part of the vertical elevation above the *columns*; same as *epistyle* (Figure G.1, G.2).

arris:

the projecting edge between two adjacent flutes of *columns*.

balaneion, pl. balaneia:

Greek bath.

base (of a column):

the lowest element in the *Ionic* or *Corinthian order*, often articulated with a molded profile. The base rested directly on the *stylobate* (Figure G.2).

boss (for lifting):

a projecting, squared knob of unworked stone, intended to facilitate the lifting of blocks into place with ropes. Usually they were chiseled off as part of the final polish of a building.

boukranion, pl. boukrania:

a cow's skull, sculpted in relief, sometimes with filets or garlands; they are depicted on altars and propylaia to sanctuaries, and other religious contexts. They symbolize sacrifices made.

bouleuterion, pl. bouleuteria:

a meeting-hall for the boule or council of a civic government.

capital:

the articulated top of a *column*. It may be in the *Doric*, *Ionic*, *Corinthian*, or *Aeolic order*.

caryatid:

a sculpted representation of a woman used in place of a *column*.

cella:

the central room of a temple, also called a *naos* or *sekos* (Figure G.3).

clamps:

fasteners made of wood, bronze, or most typically iron, in various shapes, which hold two blocks together, usually on the horizontal plane. Iron clamps were surrounded by lead to protect the stone.

coffer:

recessed square panels in a ceiling, often painted or decorated.

column:

a vertical support, articulated with a *capital*, and a *base*, in the *Ionic* and *Corinthian orders*; the shaft is fluted vertically. *Doric* columns do not have a base but sit directly on the *stylobate*.

Corinthian order:

one of three primary *orders* used in Greek architecture. Vitruvius attributes its invention to Kallimachos (late fifth century BCE). It borrows most elements of the *Ionic order*, except for its distinctive *capital*, a basket-like central element surrounded with acanthus leaves.

cornice:

the upper, overhanging part of the *entablature*; same as *geison*. It helps project rainwater away from the building.

dentils:

a string course in the upper *entablature* of the *Ionic* and *Corinthian orders*, below the *geison*, consisting of evenly spaced, rectangular projections (Figure G.2).

dipteros, pl. dipteroi:

a plan that features two rings of *columns* around the central building of a temple.

distyle:

two *columns*, typically *in antis*, positioned so that they are set flush between *antae*.

Doric order:

one of three primary *orders* used in Greek architecture. The *column* sits directly on the *stylobate* with no *base*. The *capital* consists of an *echinos* and an *abacus*, and the *frieze* consists of *triglyphs* and *metopes* (Figure G.1).

dowel:

fastener made of iron, bronze, or wood, typically rectangular in section and used for vertical attachments between an upper and lower course.

eave:

upper, overhanging part of a roof.

echinos:

the convex or cushion-shaped part of the *Doric capital*. The profile changed through time, from bulbous or flattened to a 45° raking angle; named for resemblance to a sea-urchin.

empolium, pl. empolia:

square blocks of wood inset into the center joining surfaces of column drums; they assist in placing and centering the drums.

enneastyle:

a façade with nine *columns*.

entablature:

the combined elements of the *epistyle*, *frieze*, and *geison*.

entasis:

convex curvature in the vertical profile of a *column*.

epikranitis:

a molded course at the top of a wall.

epistyle:

the horizontal course that rests on *capitals*: part of the vertical elevation above the *columns*; same as *architrave* (Figure G.1, G.2).

eschara:

a hearth.

euthynteria:

the leveling course of the foundations of a building. In a temple, the *krepidoma* is set directly on the euthynteria.

fascia, pl. fasciae:

a shallow, horizontal projecting plane. *Ionic* epistylia often bear horizontal fasciae.

frieze:

part of the vertical elevation above a *column*, above the *epistyle*. In the

Doric order, it consists of alternating *metopes* and *triglyphs*; in the *Ionic* and *Corinthian orders*, it may feature continuous relief sculpture or be left undecorated. *Frieze* may also be used for horizontal bands of relief sculpture or painted decoration in other contexts, with no columns.

geison:

the upper, overhanging course of the *entablature*; same as *cornice* (Figure G.1, G.2).

gutta, pl. guttae (or guttai):

stone representation of pegs, used on *mutules* and *regulae* in the *Doric order*.

header/stretcher:

labels given to rectangular blocks in a wall, according to how they are set in a line.

hekatompodon:

a “hundred-footer,” and a designation for a monumental temple (even if it is not 100 feet).

hestiatorion, pl. hestiatoria:

a hall for group dining.

hexastyle:

a façade with six *columns*.

hippodrome:

a race course for chariots and other equestrian events.

Ionic order:

one of three primary *orders* used in Greek architecture. The *column* sits on an articulated *base* and has a *capital* with *volutes*. The *epistyle* may have *fasciae*; the *frieze* course is continuous. In Asia Minor, *dentils* were often included above the *frieze* (Figure G.2).

isodomic masonry:

coursed masonry of rectangular blocks cut and layered so that the courses have identical heights.

krepidoma (or crepidoma):

the stepped platform of a temple.

kymation, pl. kymatia:

an architectural *molding* with a waved profile. With the concave part at the top, it is called a *kyma* (or *cyma*) *recta*; with the top part convex, it is called a *kyma* (or *cyma*) *reversa*.

lewis:

a metal lifting device used in construction.

limestone:

a sedimentary stone frequently found as bedrock, may range from soft to almost *marble*-like, and may have inclusions, such as fossils. Sometimes

referred to as *poros*, an ancient Greek word but a non-geological term.

marble:

metamorphic, crystalline stone, highly prized for sculpture and architecture. In the eastern Mediterranean, types of marble widely used in Greek architecture are white island (from the islands Paros and Naxos); Proconessian (from the Prokonessos Islands in the Sea of Marmara); Pentelic (from Mt. Pentele, northeast of central Athens); Hymettian (from Mt. Hymettos, east of central Athens). There are also “local” marbles quarried and used for buildings without the high cost of transportation, named for their locality.

metals, in architecture:

clamps and *dowels* were usually iron, sometimes bronze. Some architectural sculpture (as on the Parthenon) had metal attachments for reins, weapons, crowns, etc., of bronze or gilded bronze. Bronze attachments to the *echinos* (with floral patterns) have been found at Olympia. Lead was used to surround clamps and dowels and for repairs. Gilding was used in decoration of *coffers* and *moldings*.

metope:

a slightly recessed panel in the *Doric frieze*, often decorated with sculpture; metopes alternate with *triglyphs*.

miltos:

a red mineral (ochre) used for paint to articulate chiseled text in inscriptions; in building construction, red paint or chalk used to mark details.

moldings (or mouldings):

horizontal bands of decoration with projecting profiles, carved and painted with designs that signal their profiles. The main types used in Greek architecture are: half round (a single curve, half-circle: bead and reel decoration); ovolo (convex curve, egg-shaped: egg and dart decoration); cyma reversa (double curve, top part convex: Lesbian leaf decoration); cavetto (a concave curve in an ellipse, below a *fascia*: *Doric* leaf decoration); cyma recta (concave curve below a *fascia*: lotus and palmette decoration); hawksbeak (compound, based on a cavetto: *Doric* leaf); fascia (flat, with shallow projection: meander decoration). Their purpose is to create shadowed light and articulate transitions; used especially at the top and bottom of walls.

mutule:

a rectangular element on the *soffit* of the *Doric geison*, usually bearing peg-like *guttae*; mutules alternate with *viae*.

naiskos:

a small temple, or a temple-like façade or enclosure.

naos:

ancient Greek word for temple, often used to designate the main room of a temple; same as *cella* or *sekos*.

octastyle:

a façade with eight *columns*.

odeion:

a hall for musical performances or lectures, usually roofed.

opisthodomos:

the back porch-like room in a Greek temple, typically *distyle in antis* (Figure G.3).

orders:

see *Doric*, *Ionic*, *Corinthian*, *Aeolic*.

orthostate:

square blocks usually set in pairs on the *toichobate* to form the base course of a wall.

palaistra, pl. palaistrai:

an athletic facility, used for exercise, training, and wrestling.

pediment:

the triangular space at the end of a building with a pitched or gabled roof (Figure G.1).

peripteros, pl. peripteroi:

a row of *columns* arranged around the exterior of a building.

peristyle:

a row of *columns* arranged around the exterior of the inner building of a temple, or framing a courtyard of a domicile (Figure G.3).

plinth:

a base for a statue.

polis, pl. poleis:

a Greek city-state, ideally autonomous.

polygonal:

a type of wall construction with blocks that are shaped with multiple sides in an interlocking pattern. If the sides are curved, the term is “curved polygonal” or “Lesbian polygonal” masonry.

poros:

an ancient Greek word, used as a non-geological term for *limestone*.

pronaos:

the room in a temple that leads into the *cella* (Figure G.3).

prostyle:

a plan for a colonnade in which the *columns* are positioned in front of *antae*, rather than between them.

pseudodipteral:

an arrangement of *columns* in a temple spaced widely so that the distance between them and the walls could have accommodated a second, inner row of columns.

pseudoisodomic masonry:

coursed masonry of rectangular blocks, cut and layered so that courses of shorter height alternate with courses of taller height.

pteron, pl. ptera; pteroma:

part of the *peristyle* or colonnade, including the space between the *columns* and the walls (Figure G.3).

regula, pl. regulae:

rectangular projections that are carved at intervals below the *tainia* in the *Doric order*, with *guttae* (usually six) in a row at their bottom edge, as though hanging from it (Figure G.1).

sekos:

the inner room of a temple, also called *naos* or *cella*.

sima:

the water-gutter of a building, often articulated with water-spouts in the shape of lions' heads. A raking sima serves the same purpose along the slanting edge of a gabled roof (Figure G.1, G.2).

socle:

a low support course for wall, usually of stone. The wall could be made of a different material, such as mudbrick. *Socle* may also refer to low support courses for statues or other monuments.

soffit:

the visible undersurface of an architectural element, such as an *epistyle* (*architrave*) or a *geison*.

spira, pl. spirai:

a *base* with a circular plan.

stadion, pl. stadia:

a race course for foot races.

stylobate:

the top step and primary level of a building with *columns*, and the level on which the columns stand (Figure G.1).

tainia (or taenia):

a horizontal *molding*, rectangular in section, that runs across the top of the *epistyle* (Figure G.1).

temenos:

an area of land that is “cut off” from the ordinary world to form a sacred precinct. It may be marked with boundary stones, or with a wall, or by tradition.

terracotta:

fired clay, used for small votive figurines, for roofs and their decoration, and in statuary.

tessera, pl. tesserae:

a small, cut cube of stone (or glass) used to create mosaics. Such mosaics are called *tesselated*.

tetrastyle:

a façade with four *columns*.

tholos:

a general term meaning round structure. In Greek architecture tholos usually refers to a round temple with columns. In the Bronze Age period, tholos refers to a type of circular, cut-stone tomb, built in the shape of a bee-hive.

toichobate:

the stone course that supports a wall. It may be articulated with *moldings*.

triglyph:

a characteristic part of the *Doric frieze*, articulated as an upright projecting rectangle carved with two and two half-glyphs separated by flat vertical faces; they alternate with *metopes* (Figure G.1).

tuff:

a type of volcanic stone.

tympanum:

the triangular back surface of a *pediment*.

via, pl. viae:

a channel, rectangular in section, on the *soffit* of the *Doric geison* that alternates with *mutules*.

volute:

a spiral, found in *Ionic capitals*, or as decoration on altars or funerary monuments (Figure G.2).

xystos:

a long, roofed track for exercise, typically found as part of an athletic complex.

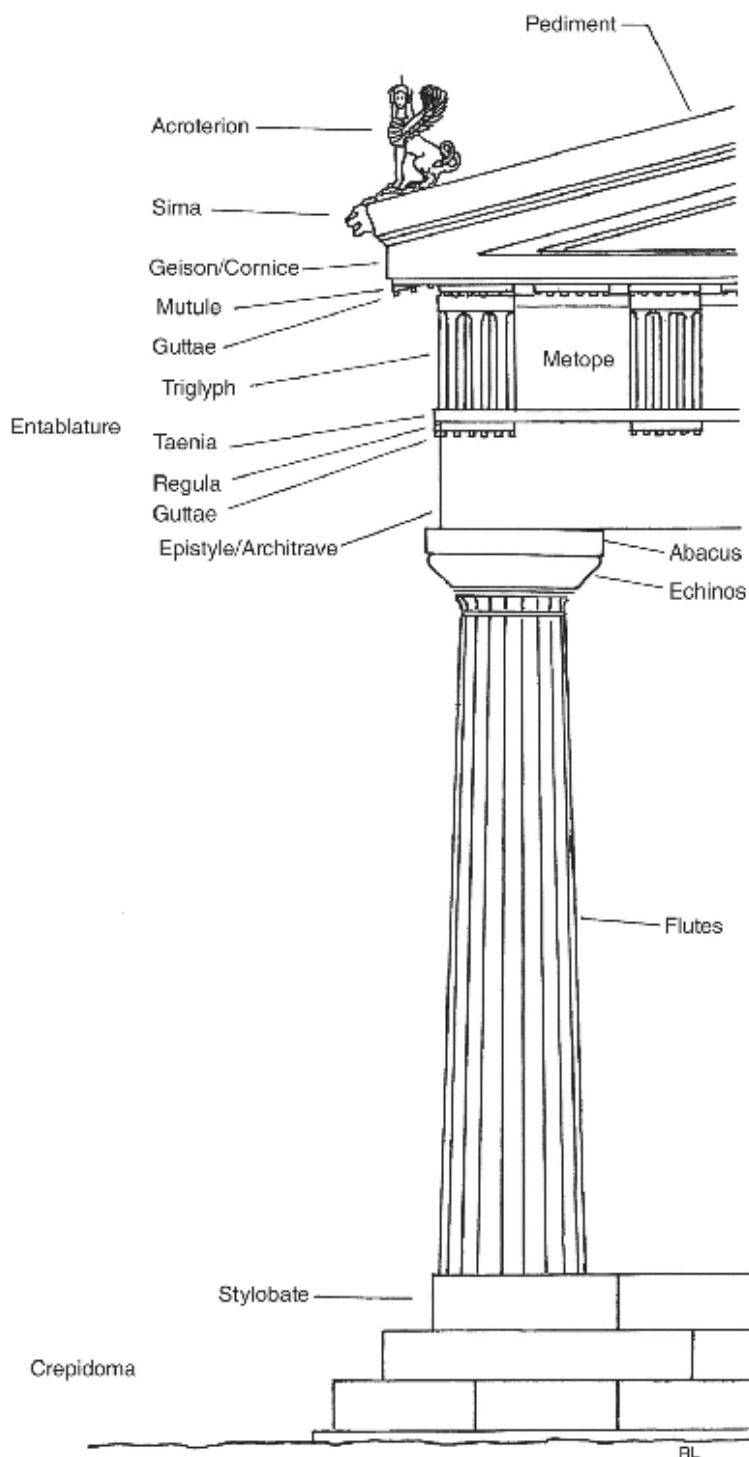


Figure G.1 The Doric Order, with parts labeled. Drawing by Rocco Leonardis.

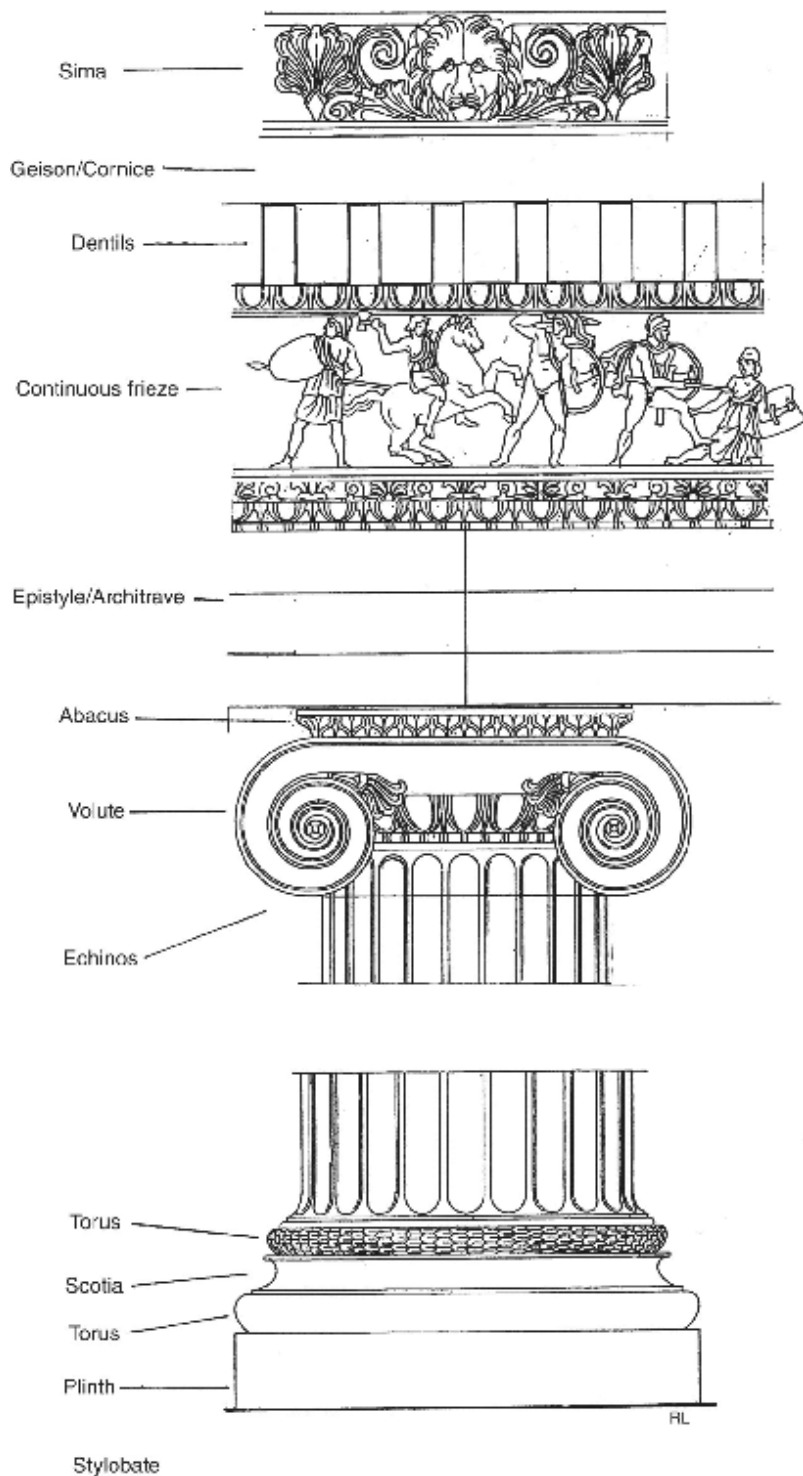


Figure G.2 The Ionic Order, with parts labeled. Drawing by Rocco Leonardis.

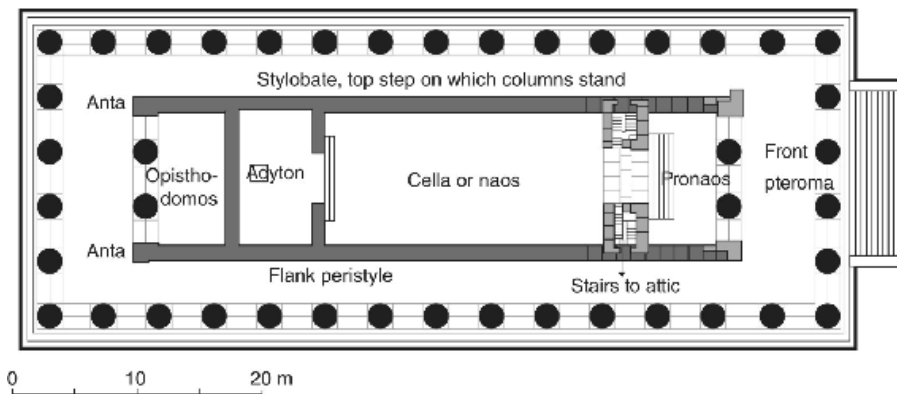


Figure G.3 Temple E at Selinous, plan, with parts labeled.

Source: M.M. Miles.

Index

abacus

definition

Doric

Ionic

scholarly understanding

Abdera

Acropolis, Athenian

Archaic period

Archaic treasury

architectural procession

Athena Promachos statue

Attalid pillar monument

building accounts

Chalkotheke

Cyclopean stonework

dromos stelai

Erechtheion

altars

building accounts

Caryatid Porch

color

curvature

double building

east porch

ever-burning oil-lamp

façades

foundation cults

frieze

functions

Ionic order

north porch

objects contained

Panathenaia

Pausanias' account

relationship to Temple of Athena Polias

roof

Sicilian influence

view from city

view from Propylaia

windows

workforce

foundation cults

Frankish Tower

Hekatompedon

humans – deities relationship

inscriptions

internationalism

interventions

Balanos'

modern; *see also* Parthenon pronaos case study

Pittakis'

Ross'

von Klenze's

Ionic order

architectural procession

as direct access to city

non-processional uses

Klepsydra fountain

monumental effect

Mycenaean heritage

north wall

Odeion of Herodes Atticus

Older Parthenon

painted sculptures

Panathenaic Procession

Parthenon

architects

architectural procession

Athena Parthenos statue

British and French removals

building accounts

Carrey drawings

cella, size of

colonnade

color

curvature

dedicated vessels

diagram of design process

Doric and Ionic mixture

east front

fire and war damage

4 : 9 ratio

frieze

geometry

internationalism

meanings

metopes

Mycenaean heritage

octastyle

Pausanias' account

- pediments
- peristyle ceiling
- pool
- pronaos preservation *see* [Parthenon pronaos, case study](#)
- reflecting pool
- sculpted decoration
- sculptural techniques
- size
- statue of Athena Parthenos
- theme
- use as palace
- wall construction
- Wheler's drawing
- windows

Pergamene architecture

Periclean rebuilding

Persian destruction 480 BCE

Persian war, memories of

Propylaia

- architect
- Doric and Ionic mixture
- east façade
- expenses
- materials inspection
- Mycenaean heritage
- Pinakotheke
- processional language
- reuse of older blocks
- scale
- scholarly understanding
- transformation

windows

prostyle temples

reconstruction

Sanctuary of Artemis Brauronia

scholarly understanding

security

siege of 86 BCE

Stoa of Eumenes

Temple of Asklepios

Temple of Athena Nike

akroteria

authorization plans

building inscription

color

Doric and Ionic mixture

frieze

Ionic order

Mycenaean heritage

processional language

reconstruction

view from city

Temple of Athena Polias

as focal point

Mycenaean heritage

Panathenaia

relation to other buildings

reused blocks

rooms

ruins as memorial

Venetian siege

Acropolis Monuments Restoration Service (YSMA)

Actium, Battle of

Adams, James

Ada of Caria

adytons

Aegina

Aemilius Paullus, L.

Aemilius Scaurus, M.

Aeolic order

Aeschines

Aeschylus

Agathocles

Agesipolis

Agora, Athenian

- Altar of the Twelve Gods

- apobates event

- artist's view, fifth century

- athletic events

- bouleuteria

- boundary stones

- construction and materials

- cult installations

- festivals

- founding

- fountains

- gardens

- Hephaisteion

 - ceiling

 - construction and materials

 - cult statues

 - curvature

 - frescoes

friezes
gardens
interior
pairing with treasury at Delphi
reconstruction
scholarly understanding
visitors, modern

Hermes

locations

military activity

military trophies

mint

mudbrick

plans

prytaneion

racetrack

roof tile standard

scholarly understanding

South Stoa I

Square Peristyle (lawcourts)

Stoa Basileus

Stoa of Attalos II

Stoa of Zeus Eleutherius

Stoa Poikile

Temple of Apollo Patroos

Temple of Ares

Temple of Athena Pallenis

Temple of Theseus *see* Hephaisteion *above*

Tholos

transferred temples

Agorakritos

agoras

- archeia
- athletic competition
- bouleuteria
- boundary stones
- city planning and urban design
- civic life and politics
- commerce
- compared to Roman forums
- construction and materials
- cult, religion, festivals
- fountains and water
- gardens
- as hippodromes
- meaning of “agora”
- memorials and public honors
- military activity
- origins
- overview
- prytaneia
- statues
- stoas
- theatral areas
- water basins
- see also* [Agora, Athenian](#)

agriculture

Agrigento *see* [Akragas \(Agrigento\), Sicily](#)

Agrippa

Aiani

Aigai *see* [Vergina \(Aigai\)](#)

Aigina

attacks on Athens

Garnier's study

limestone use

Marbles, auction of

ports

ship sheds

Temple of Aphaia

colonnade

color

curvature

Garnier's study of

interior

moldings

refinements

roof system

sculpture

windows

Aigosthena

Ai-Khanoum

Aineia

Aizanoi

Akragas (Agrigento), Sicily

Carthaginian invasion

caryatids

Emmenids

geison design

Herakles statue

Olympieion

Pancrazi's study

sacellum

Temple A

temple building

Temple of Asklepios

Temple of Concord

Temple of Zeus

theater

visitors, modern

Akrai, Sicily

akroteria

definition

diagram

pictured on calyx-krater

roof systems

Sanctuary of Zeus, Labraunda

Temple of Athena Nike, Athens

three-dimensional

Alabanda

Alexander I of Macedon

Alexander IV of Macedon

Alexander the Great

Achaemenid palaces, use of

building projects

Alexandria, Egypt

Alexandria-on-the-Oxus

Olympia

sanctuaries

death

Gordian knot

restoration of Ada

Tent of One Hundred Couches

tombs

Alexandria, Egypt

baths

Deinokrates' plan

geometry

Hellenistic-to-Roman transition

Lighthouse

odeia

Pharos island

royal palace

Serapeion

tombs

Vitruvius' description

Alexandria-on-the-Oxus

Alinda

Alketas of Macedonia

alluvial processes

altars, funerary

altars, sacred

Alyattes of Lydia

Amasis of Egypt

Ambracia

Amnisos, Crete

Amorgos

amphitheaters

Amyklai

anastylosis; *see also* preservation of ruins

anathyrosis

Anaximander of Miletos

ancestor worship

Ancyra

Andros

Anemurium

annulet

Ano Mazaraki (Rakita)

antae

antefixes

Argive roof system

definition

on houses

Laconian roof system

Northwest Greek roof system

Proto-Corinthian roof system

Roof 1, Olympia

on royal palaces

on ship sheds

anthemion

Antichita Siciliane spiegate (Pancrazi)

Antigonos Gonatas

Antioch-on-the-Orontes

Antiochos IV Epiphanes

Antiochos XIII Asiaticus

Antipater of Sidon

Antiphon

L'Antiquité expliquée et représentée en figures (Montfaucon)

The Antiquities of Athens (Stuart and Revett)

The Antiquities of Ionia (Society of Dilettanti)

Aphrodisias

Apollonia, Cyrene

Apollonia, Illyria

Apollonis

aqueducts

Athens

Ilissos River

Near East

Samos

arch

archeia

Archelaus of Macedonia

Archilochos

Archimedes of Syracuse

architectural practices

drawings

Didymaion

nature of

reduced-scale representation

relation to master planning

scale planning

tools for

Vitruvius' references to

Egyptian

foot measurements

geometry *see* [geometry](#)

metrology and modularity

models

orders

proportions, system of

theater design

tools

tunnel of Eupalinos

see also [construction techniques/technologies](#)

architectural theory

architectura, defining

Aristotle

ideai

Plato

Vitruvius

architectura, departments

architectura, processes and principles

ideai

Vitruvian Man

De Architectura (Vitruvius); *see also* [Vitruvius](#)

architrave

definition

Doric

Ionic

moving and positioning

Argive roof system

Argolid Exploration Project

Argos

agora

assembly building

bouleuterion

climate

contracts

Cyclopean stonework

Heraion

color decoration

fire

limestone use

mudbrick

peripteral temple

roof

odeion

racetrack

theater

Ariobarzanes of Cappadocia

Aristaineta

Aristides

Aristophanes

Aristotle

agoras

art of building

Athenian Council

Athenian officials

climate

houses

Lesbian masonry

nature

urban planning

Arkesios

Arrian

arris

Arsinoë II of Egypt

Artaxerxes II of Persia

Artemisia of Caria

Arykanda

Asine

Assos

Assyria

Athenaeus

Athens

Academia

Acropolis *see* [Acropolis, Athenian](#)

Agora *see* [Agora, Athenian](#)

aqueducts

Asklepieion stoa

astynomoi

baths

bouleuteria

building expenses

cesspits

city walls

Council

cult statue bases

dromos

École française d'Athènes

festivals

fountains

grave of Plato

gymnasia

harbors; *see also* [Piraeus](#)

Hellenistic-to-Roman transition

Hermes

hippodrome

houses

Kerameikos

Kynosarges

limestone use

Long Walls

Lyceum

Lysicrates Monument

Mycenaean heritage

odeia

Olympieion

Panathenaic Stadium and Theater

Panathenaic Way

Panhellenic games

Pnyx

political officials

pseudo-isodomic masonry

Sanctuary of Dionysos

shrine of Acheloös and the Nymphs

statue of Agrippa

Temple of Zeus Olympios

Theater of Dionysos

Theseus' ship

treasury at Delphi

Tribute Lists

visitors, modern

water supply

workforce

athletic events

in agoras

Athena Nikephoros games

chariot races

cultural importance

equestrian events

foot races

Panhellenic games

athletic facilities

closeness to sanctuaries

dromos

gymnasia

hippodromes

palaistra

portable

stadia

Atilius Caiatinus, A.

Atlantes

Attalids *see* [Pergamon](#)

Attalos I

Attalos II

Attalos III

Attica

Aiginetan invasions

caves

Dema Wall

demes

farmhouses

festivals

geography

map

marble quarries

político-spatial organization

sanctuaries

deme-specific

functions

funding

Panathenian

silver mines

social identity

theaters

Theban invasion

attics

Augustus

architectural style

building projects

Ancyra

Athens

Pisidian Antioch

Rome

imperial cult

Res Gestae

tusks of Kalydonian boar

Ayia Irini, Keos

Baalbek

Babin, Jacques-Paul

Babylon

Bacchylides

balaneia *see* [baths](#)

Balanos, Nikolaos

Bargylia

Barthélemy, Jean-Jacques

Bartholdy, Frédéric

basements

Bassai, Temple of Apollo

architrave

colonnade

diagram of design process

frieze

geometry

interior

orientation

baths

early baths

Egypt

Hellenistic period

images

ownership and patronage

Southern Italy and Sicily

study of

Baths of the Romans (Cameron)

Battista Borra, Giovanni

Bayle, Pierre

Belevi

Beroia

Beulé, Charles-Ernest

Blondel, François

Blondel, Nicolas-François

Blouet, Guillaume-Abel

Boeotian Confederacy, *naopoioi* of the

Boeotia Survey

Boiotia

Boito, Camillo

bosses, lifting

boukrania

bouleuteria

in agoras

Athens

compendium

definition

Eleusis

excavation and study

forms

functions

hybrid buildings

known examples

layout

for league meetings

location and access

Miletos

Olympia

other names

performance types

recently discovered/published

seating capacity

setting

summary

Bouras, Charalambos

Bouverie, John

Brauron

Sactuary of Artemis

sandstone use

stoa

breakwaters

Britain

Blagdon Hall, Northumberland

British Museum, London

Church of St. Pancras, London

Downing College, Cambridge

The Grange, Northington

Greek Revival

The Grove, Hertfordshire

Hagley Hall, Worcestershire

Hammerwood Park, Sussex

Malvern Hall, Warwickshire

portico, West Wycombe

Strawberry Hill, London

British ideas/scholarship

ancients and modern debate

antiquities collections

British Empire as new Greece

Grand Tour

Grecian architecture

Greek Revival

Greek–Roman debate

Greek–Roman mixture

interest in Greek architecture

national identity

Neoclassicism

preservation vs. restoration

rivalry with France

rule-bound style

Society of Dilettanti

travels to monuments

Broneer, Oscar

Bryaxis

building accounts

Buonarotti, Filippo

Burke, Edmund

Byzantion

Caecilius Metellus Dalmeticus, Q.

Caecilius Metellus Macedonicus, Q.

Caesar, Julius

Caldwall, James

Callimachus of Cyrene

Callixenus of Rhodes

Calydon/Kalydon

Camarina

Cameron, Charles

Canon (Polykleitos)

Cape Lacinium

Cape Tainairon

Cape Zoster

capitals

- Aeolic

- Corinthian

- definition

- Doric

- Ionic

Caria; *see also* [Labraunda](#)

Carrey, Jacques

Carthage

- defeat at Himera

- invasions by

- Punic Wars

- ship sheds

- treasury at Olympia

Cartheia

caryatids

- definition

- development

- Erechtheion

Cato the Elder, M. Porcius

Caulonia

cella

Central Archaeological Council (KAS)

Chabrias

Chaironeia

- Battle of

- theater

Chandler, Richard

Chares of Lindos

Charlemont, James Caulfeild, Earl

Chersiphron

Chigi Vase

Chios

Choiseul-Gouffier, Marie-Gabriel-Florent-Auguste de

Choisy, Auguste

- colonnades

- Doric order

- Ionic order

- Le Roy's influence

- picturesque

- Propylaia

- reinterpretation of Greek architecture

- Temple of Hera I

Chryse

Chrysis

Cicero

cinerary caskets

city walls and fortifications

- Archaic period

- ashlar masonry

- Classical period

- Classical period, late

- curvilinear polygonal masonry

- Cyclopean stonework

- forts

- gates

- Gelandemauren*

- Hellenistic period

- mudbricks

- polygonal masonry

proteichisma

sieges, responses to

towers

trapezoidal masonry

civic life and politics

clamps

Claros

clay extraction

Cleopatra VII of Egypt

climate and microclimate

Cockerell, Charles R.

coffers

coined money

colonnades

Doric order

French views

interior

peristyle

stone

color

athletic facilities

colored marble

colored stone

French views

glass

paint

architectural elements

inscriptions

portraits of donors

roofing elements

sculptures

tombs

on upper structures only

wall paintings

panels

column bases

columns

definition

Doric

as grave markers

interior articulation and placement

Ionic

used to increase building size

see also [peristyle](#)

Committee for the Restoration of the Acropolis Monuments (ESMA)

concrete

Constantinople

Constitution of the Athenians (Aristotle)

construction funding; *see also* patronage

construction techniques/technologies

arch

baths, heating of

city walls *see* [city walls and fortifications](#)

concrete

curvature *see* [curvature](#); [entasis](#)

façades, design of

foundations

geometry *see* [geometry](#)

intercultural influences

Kroisos Temple

literary sources and building inscriptions

materials

moldings

monumentality

orders

peristyle

proportions, system of

quarrying and transporting materials

refinements

Roman

roofs *see* [roofs](#)

site preparation

stone construction

terracottas, use of

tools and drawings

tunnel of Eupalinos

two-skin construction technique

vaulting

walls

see also [architectural practices](#)

construction time scales

contracts, building

building by committee

checking works in progress

inscriptions

private contracts

Roman

theater repairs

Contrada Marasà

Copais

Corcyra (Corfu)

limestone use

pediments

ports

roof system

roof tiles

ship sheds

Temple of Artemis

Temple of Hera

Cori

Corinth

agora

amphitheater

athletic facilities

baths

contracts

destruction

fountains

masonry techniques

odeion

ports

quarries

racetrack

roofs

scholars visits to

seventh-century BCE temple

South Stoa

Temple of Apollo

color

curvature

interior decoration

moldings

peristyle

refinements

- roof
- stone used
- wooden timbers

- walls
- water management
- wood, use of

Corinthian order

cornices

- definition

- Doric

- Ionic

Cossutius

Coulton, J.J.

Cours d'architecture (Blondel)

Crete

crops

Croton

cult buildings; *see also* [temple development](#); [temples](#)

cult images/statues *see* [statues, cult images](#)

cult practices

Cumae

curvature; *see also* [entasis](#)

Cyprus

Cyrene

- city walls

- ports

- Swing Tomb

- treasury at Delphi

- treasury at Olympia

Cyrus the Great of Persia

Cyzicus

Dalton, Richard

Damophon

Daphnis (of Miletos)

Darius I of Persia

Darius III of Persia

Dawkins, James

decoration

- baths

- color *see* [color](#)

- Doric order

- friezes *see* [friezes](#)

- Ionic order

- moldings

- mosaic floors

- odeia

- relief sculpture *see* [relief sculpture](#)

- roofs

- sculpture *see* [sculpture](#)

Deinokrates

Deinomenids

Delagardette, Claude-Mathieu

Delion

Delos

- agoronomia

- contracts

- cults of foreign gods

- first temple of Apollo

- fountains

- Heraion

- hippodrome

- houses

marble use

Monument of the Bulls

Oikos of the Naxians

palaistra

Pan-Ionian sanctuary

prytaneion

quay and breakwater

Sanctuary of Apollo

Sanctuary of the Syrian Gods

Serapeia

stoas

Temple of the Athenians

timber imports

trapezoidal masonry

and sanctuary at Zoster

Delphi

Aemilus Paullus statue

Amphiktyony

Archaic Tholos

Argive semi-circle

bouleuteria

building accounts

curvilinear polygonal masonry

dedications, movement of

design and placement of structures

disunity

experience of, over time

funding of buildings

gymnasium

hippodrome

inscriptions

Lesche of the Knidians

letter “E”

limestone use

meaning of structures

Old Tholos

palaistra

Panhellenic games

Panhellenism

Pausanias’ visit

Pergamene architecture

plan

prestige

Proto-Corinthian roofs

quarries

sack by Phokians

Sacred Way

Sanctuary of Apollo

Sanctuary of Athena

scholarly understanding

sculpture, architectural

Sikyonian Treasury

space around structures

Spartan victory monuments

stadium

stelai

stoas

Tarentine dedications

Temple of Apollo

Temple of Athena Pronaia

Tholos

topography

treasuries

akroteria

Athens

caryatids

identification

orientation

plan

prestige

Siphnos

Thebes

victory monuments

visitors' pathways

Demetrias

Demetrios (sculptor)

Demetrios of Phaleron

Demetrios Poliorcetes

Demetrios (architect)

de Monceaux, André

de Montfaucon, Bernard

Demosthenes

Dempster, Thomas

Dendera, Egypt

dentils

Desgodetz, Antoine Babuty

Despotiko

de Tubières, Anne-Claude-Philippe

de Vos, Marten

Dictionary (Bayle)

Dictionnaire Raisonné (Viollet-le-Duc)

Didyma, Sanctuary of Apollo

adyton

architects
architectural drawings
architectural sculpture
construction as progression
construction phases
dipteroi
entasis
Hellenistic rebuilding
long construction period
metrology and modularity
motifs
plan
planning and construction
Roman and Hellenistic building
Roman temple
Samos, influence of
scale and planning
stairways
theory
three-fascia architrave
unity
view from northeast

Diodorus Siculus

Diognetos

Dion

Dionysia festival (City)

Dionysia festival (Rural)

Dionysios I

Diophantos

dioptra

dipteroi

distyle

Dodona

Dokimos

Doric order

- characteristics

- Choisy's comparisons

- definition

- diagram

- domestic architecture

- evolution

- French views

 - evolution of order

 - perfection of order

 - rustic cabin

- interior columns

- proportional ratio

Doryphoros statue (Polykleitos)

dowels

drains

- baths

- forums

- stadia

- streets

dromos

Dughet, Gaspard

Duilius, C.

Du Loir, Sieur

du Moncel, Th.

Dura-Europos

Durand, Jean-Nicolas-Louis

Dystos

earthquakes

Ecbatana

echinus/echinos

- definition

- Doric

- Ionic

- scholarly understanding

Edfu, Egypt

Egypt

- building designs

- clamps and dowels

- design tools and drawings

- geometry

- Greek baths

- Hellenistic architecture

- hydraulic engineering

- influence

- Ptolemaic construction

- Roman takeover

- see also* [Alexandria, Egypt](#)

Eion

Eleusis, Sanctuary of Demeter and Kore

- Anaktoron

- contracts

- early cult activity

- hypostyle hall

- Kallichoron well

- location

- mudbrick walls

- Philon's Porch

- Ploutonion

Telesterion

temenos walls

Elgin, Thomas Bruce, 7th Earl

Elis

Emmenids

empolia

Emporio, Chios

enneastyle

entablature

entasis

Entwurf Einer Historischen Architectur (Fischer von Erlach)

Epaminondas

Ephesos

agoras

Artemision

architects

architectural records

eighth century BCE temple

epiphany windows

foreign influence

influence

Kroisos Temple

marble use

Roman temple

seventh century BCE temple

Seven Wonders

sixth century BCE temple

stone column bases

technologies used

tile roofs

transport of stone

windows

bouleuterion

circuit wall

Mausoleum at Belevi

mortared rubble masonry

Parthian Monument

prytaneion

Epidamnos, treasury at Olympia

Epidauros

contracts

stadium

stone used

Temple L

Temple of Asklepios

theater

Tholos

epikranitis

Epimachos (architect)

Epipolae, Sicily

epistyle

Erbinna

Eretria

baths

cult buildings

hekatompedon

houses

mole

Persian invasion

plan

Sanctuary of Apollo

temples

tombs

walls

Erythrai

Eryx

eschara

Essai sur l'architecture (Laugier)

Essai sur le goût (Montesquieu)

Etruria

Erusco-Italic tradition

and Italian national identity

roofs

De Etruria regali (Dempster)

Etrusco-Italic architecture

Euclid

Eumenes II

death

patronage

Pergamon building projects

Great Altar

gymnasium

palace

Royal District

stadium-theater complex

stoas

urban planning

Stoa of, Athens

Euonymon

Eupalinos of Megara

Euphranor

Euripides

euthynteria

fasciae

festivals

- agoras, use of

- athletic events

- Brauronia

- Dionysia, City

- Dionysia, Rural

- Greater Panathenaia

- Hellotia

- of Hera

- Lenaia

- Mysteries

- Panathenian

- sanctuaries, importance of

- Sounion

field surveys

Fischer von Erlach, Johann Bernhard

Flamininus, T. Quinctius

Florina

foot measurements

fortifications *see* [city walls and fortifications](#)

forts

forums

foundations, construction of

fountains

France

- Académie des Beaux-Arts

- Académie des Inscriptions

- Bibliothèque Sainte-Geneviève, Paris

- Church of Sainte-Geneviève, Paris

École des Beaux-Arts, Paris

École Polytechnique, Paris

Louvre, Paris

Opéra, Paris

Petit Trianon, Versailles

Porte Saint-Denis, Paris

Villa La Roche, Paris

Villa Savoye, Poissy

Françoise Vase

Fréart de Chambray, Roland

French ideas/scholarship

archaeology

autonomy of Greek architecture

change and adaptability in Greek architecture

Doric order

eighteenth- and nineteenth-century views

imitation

invention

motion in architecture

“picturesque”

polychromy

preservation vs. restoration

restoration

rivalry with Britain

rustic cabin

travel to monuments

visual experience

French Revolution

friezes

definition

Doric

Great Altar, Pergamon

Ionic

Parthenon

Fulvius Nobilior, M.

funding; *see also* patronage

funerary monuments *see* [grave markers](#); [tombs](#)

furnishings

gardens

Garnier, Charles

Gau, Franz Christian

geisa

definition

Doric

Ionic

Gela, Sicily

agora

baths

Carthaginians, sacking by

mudbrick

Temple of Athena

treasury at Olympia

urban planning

geometry

development

doubling area of a square

examples of use

practical applications

proportional ratio

Pythagorean triangle

theaters

tools and drawings

Vitruvius' narrative

Geschichte der Kunst des Alterthums (Winckelmann)

Gibbon, Edward

gigantomachy

Gill, D.W.J.

Giovannoni, Gustavo

Golden Section

gold offerings

Goodyear, W.H.

Gori, Antonio

Gortyn

Gortys

Grand Panathenaia

Grand Tour

grave markers

altars

cinerary caskets

columns and pilasters

iconography

painted stelai

reliefs

sarcophagi

statues

stone vases

trapezai

Greece and the Aegean, map of

Greek Revival

groves

guttae

gymnasia

Gyphtokastro

Hadrian

Hahn, Robert

Halieis

- cesspits

- city planning

- stadium

- Temple of Apollo

- walls

Halikarnassos, Mausoleum at

handbooks

Hansen, Christian

harbors; *see also* [Piraeus](#)

headers/stretchers

Heath, Sir Thomas

Hekatomnos of Caria

hekatompeda

Helepolis

Helike

Hellenistic architecture

- additions to older sanctuaries

- sacred sculpture

- sanctuaries

 - characteristics

 - foreign gods and foreign lands

 - Sanctuary of Asklepios, Kos

 - Sanctuary of Athena Lindia, Rhodes

 - Sanctuary of Athena, Priene

 - Sanctuary of Demeter, Pergamon

 - Sanctuary of Despoina, Lycosura

 - Sanctuary of the Great Gods, Samothrace

 - Sanctuary of Zeus, Megalopolis

Hellenization of Roman architecture

Hephaistia

Hephaistion (mosaicist)

Herakleia-by-Latmos

Herculaneum

Hermione, sanctuary of Demeter Chthonia

Hermodoros

Hermogenes

- Doric order

- plans and drawings

- popularity

- pseudodipteral temple

- scale planning

- spatial effects

- Temple of Artemis Leukophyrene

- Temple of Artemis, Magnesia

- Temple of Dionysos, Teos

- Temple of Zeus Sosipolis

Hermopolis Magna, Egypt

hero, worship of

Herodes Atticus

Herodotus

Heron (of Alexandria)

- agoras

- Aiginetan attacks

- bathing

- birthplace

- Kleisthenes

- Kroisos Temple, Ephesos

- Labraunda

- reading aloud

Samos breakwater

Seven Wonders of the World

stadion

Tunnel of Eupalinos

hestiatoria

hexastyle

Hezekiah of Judah

Hieron I

Hieron II

Himera, Sicily

Carthaginians, sacking by

Carthaginians, victory over

city planning

Temple A

Temple B

Temple of Victory

urban planning

Hippodamos of Miletos

hippodromes

Hippokrates

Hipponion (Italy)

Histoire de l'architecture (Choisy)

Hittorff, Jacques-Ignace

Hoepfner, W.

Hoffer, L.

Homer

agoras

athletic facilities

disdain for trade

Panhellenic sanctuaries

Pharos, description of

Troy's walls

Homolle, Théophile

Hope, Thomas

houses

builders

construction and materials

metal fittings

mudbrick

stone

terracotta

wood

decoration

doors

farmhouses

luxury

planning and layout

andrones

basements

bathrooms

courtyards

food preparation

gardens

gynaikōn

latrines

living and working spaces

mosaic floors

porticoes

southern exposure

tameion and histeion

upper stories

use of space

vestibules

wells and cisterns

Roman

scholarly neglect

security

urban environment

allotments

drains and cesspits

legislation

party walls

shops and shrines

street systems

windows

Huyot, Jean-Nicolas

Iaitas, Sicily

Iasos

ideai

Idrieus of Caria

Ikaria

deme of

plan of site

statue of Dionysos

Temple of Dionysos

Temple of Pythian Apollo

theater

Iktinos

Iliad (Homer)

Ilissos

India

inscriptions

accessibility of texts on site

- accounts
- Acropolis
- agoras
- bouleuteria
- building accounts
- building by committee
- building functions
- checking works in progress
- contracts
- craftsmen
- dedications
- dromos
- Eupalinos' tunnel
- funerary
- Great Altar frieze
- gymnasia
- hippodromes
- inventories
- odeia
- patrons
- regulations
- ship sheds
- stadia
- types of texts
- interiors, temple
 - columns, articulation and placement
 - cult images
 - dedicated items
 - furnishings
 - light
 - opaion tiles

paintings and votive statues

reflecting pools

rituals

security

space, organization of

stairs, attics, basements

temples as museums

ventilation

visitors

Inwood, William and Henry

Ion (Euripides)

Ionian Antiquities (Chandler, Revett, Pars)

Ionian Sea Style

Ionic order

characteristics

definition

French views

interior columns

marble moldings

octastyle

Iran

Iria, Naxos

Irish scholarship

iron mines

isodomic masonry

Israel

Isthmia

hippodrome

houses

Panhellenic games

stadium

Temple of Poseidon

- exterior decoration
- interior decoration
- masonry techniques
- Panhellenism
- peristyle
- roof
- size
- stone geison
- stucco
- wooden timbers

theater

Italy

Etrusco-Italic tradition

Greek culture

map

preservation vs. restoration

Roman Republic/early Empire *see* [Roman Republic/early Empire](#)

Stabiae villas

see also [Sicily](#); [Southern Italy](#); *specific sites*

Ithaca

Jean-Bernard, abbé Le Blanc

Jefferson, Thomas

Jupiter Olympien (Quatremère de Quincy)

Kalapodi, Sanctuary of Apollo

cult continuity

limestone use

North temple

paintings

peristyles

South temples
votive offerings
wooden columns

Kallikrates

Kallimachos

Kalydon/Calydon

Kamarina, Sicily

al-Karaji

Karpion

Karthaia, Kea

Kassope

Katerini

Kaulonia

Kekrops

Kimon

Kircher, Athanasius

Kleisthenes

Kleoitas son of Aristokles

Knidos

Knights Hospitallers of St. John

Kolonos

Kolophon

Kommos

Kom Ombo, Egypt

Konon

Koroibos

Korres, Manolis

Kos

Charmyleion

Sanctuary of Asklepios

kosmos

Krateros

krepidoma

definition

geometry

Kroisos of Lydia

Kyaneiai

kymatia

Kynosarges

Kypselos

Kythnos

Labraunda

pre-Hekatomnid

Sanctuary of Zeus

akroteria

Andron A

Andron B

architectural significance and impact

Doric and Ionic mixture

Doric Building

East Stoa

location

“Magazine Building”

North Stoa

Oikoi

Propyla, South and East

Temple

Labrouste, Henri

Laconian roof system

Laconia Survey

Lagina

Lamos

landscape archaeology

landscapes

- agriculture, gardens, groves

- approaches

- climate and microclimate

- ground cover and zoning

- mineral resources

- mountains

- physical geography

- responses to, ancient

Larisa

Lato, Crete

Latrobe, Henry Benjamin

Laugier, Marc-Antoine

Laurion silver mines

La Vega, Francesco

leagues

Lebadeia

- contracts

- hippodrome

- Temple of Zeus Basileus

Lechaion

Le Corbusier

Lectures on Architecture (Viollet-le-Duc)

Lefkadia

Lefkandi-Toumba heroön

Leochares

Leonidas

Leotychides II

Lepidus, M. Aemilius

Le Roy, Julien-David

autonomy of Greek architecture
evolution of Greek architecture
Greek–Roman debate
importance of *Les Ruines*
influence
motion in architecture
Parthenon
Propylaia, Athens
publication of *Les Ruins*
Stuart's attack on
superiority of Greek architecture
Temple of Hera I, Paestum
Temple of Minerva, Athens
Temple of Theseus
wooden construction

Lesbos

Letoön

Leuctra, Battle of

lewis device

Liberty Lighting the World (Bartholdy)

Libon of Elis

lime plaster

limestone

Lindian Temple Chronicle

Lindos, Rhodes

Sanctuary of Athena Lindia

stoas

Temple of Athena

Liternum

Livadiotti, M.

livestock

Livy

Locri Epizephyrii

Lodoli, Carlo

Lorrain, Claude

Lorymna, Rhodes

Ludwig of Bavaria

Lugdunum (Lyon)

Lutatius Catulus, Q.

Lycosura

Lydia

Lyttelton, George, 1st Baron

Ma'agan Mikhael shipwreck

Macedonia

- defeat by Rome

- environment

- palaces

 - Pella

 - Vergina

- Philippeion at Olympia

- tombs

Maeander river valley

Magne, Lucien

Magnesia

- agora

- Temple of Artemis

 - altar

 - construction time scale

 - epiphany windows

 - frieze and akroterion

 - front elevation

 - Hermoeogenes' account

plan

pseudodipteral plan

scale planning

Temple of Zeus Sosipolis

Mahdia Wreck

Major, Thomas

Mallwitz, Alfred

Mantineia, Battle of

Mantineia

maps

Attica

cities with a treasury at Olympia

Greece and the Aegean

Italy

Mediterranean

Southern Italy and Sicily

Marathon, Battle of

Marathonian Tetrapolis

marble

ceilings

Colossus of Rhodes

definition

Egyptian influence

grave markers

gymnasia

Mausoleum at Halikarnassos

odeia

painted

palaces

quarries

Rome

roofs

sculpture and decoration

temples

thrones

tombs

Marcellus, M. Claudius

Mariette, Pierre-Jean

Maronea

Marseilles (Massalia)

Martial

Martoni, Nicola de

Massalia (Marseilles)

Maussollos of Caria

Mazzochi, Alessio Simmaco

meaning of structures

Mediterranean, map of

Megalopolis

agora

city walls

Sanctuary of Zeus Soter

Stoa of Philip II

theater

Thersilion

Megara

Athenian ban from agoras

fountain

harbor wall

heroön

houses

treasury at Olympia

Megara Hyblaia, Sicily

Melie

Memphis, Egypt

Mende

Meno (Plato)

Meno's diagram

Mertens, Dieter

Messa, Lesbos

Messene

Arsinoë Fountain

Asklepieion

city walls

odeion

stadium

tombs

Messenia

Metagenes

Metapontum

city planning

friezes

Tempe A I

Temple A II

Temple B I

Temple B II

Temple C

Temple D

Temple of Hera Tavole Palatine

theater

treasury at Olympia

Methana

metopes

definition

diagram

as narrative

painted

Parthenon

Western Greece

see also [triglyph–metope frieze](#)

Metropolis

bouleuterion

Temple of Apollo

microclimate

Miletos

agoras

alluvial processes

bouleuterion

grid plan

stoas

theater

walls

Miller, Sanderson

miltos

mineral resources

Minnesota Messenia Expedition

Misenum

Mnesikles

Mnesimachos

moldings

moles

Mon Repos, Corcyra

Montagu, Elizabeth

Montesquieu

monumentality

- architectural orders
- defining “monumental”
- foreign influence
- moldings
- peristyle
- reasons for
- scale
- stone construction
- tile roofs
- as transition/transformation

Morgantina, Sicily

- agora
- baths
- houses
- shops

Morris, William

mortared rubble masonry

Motya

mountains

Mount Lykaion

Mount Mykale

Mucius, C.

Mucius Scaevola, Q.

mudbricks

- city walls
- early buildings
- houses
- protecting

Mummius, Lucius

Munich

Museum Etruscum (Gori)

mutules

Mycenae

and the Acropolis

arches

climate

cult activity

Lion Gate

megaron

stonework

temple

tile roofs

wooden columns

Myron of Sikyon

Mytilene, Lesbos

naiskoi, funerary

naiskoi, sacred

naos

Naples

Napoleonic War

national identities

nature, ancient responses to

Naxos island

marble quarries

marble use

ritual dining

Sanctuary of Iria

Temple of Demeter and Kore, Sangri

Temple of Dionysos, Yria

Naxos, Sicily

altar to Apollo Archegetes

city walls

destruction by Hippokrates

ship sheds

Temple H

Temple of Apollo

urban planning

Neandria

Near Eastern influence

Necho II

Nemea

athletic facilities

barrel vault

baths

Panhellenic games

Panhellenic sanctuary

Temple of Zeus

wood use

Neo-Assyrian Empire

Newton, Charles

Nicomachean Ethics (Aristotle)

Nikias

Nikoleika

Nile River Boat

nine, number

Nointel, Charles-Marie-François Olier, Marquis de

Northwest Greek roof system

Notion

Nysa

octastyle

Octavius, Gn.

Oculatius Verus, M.

odeia

access to stage and orchestra

Aphrodisias

Athens

Odeion of Agrippa

Odeion of Herodes Atticus

Odeion of Pericles

bouleuterion, comparison with

compendium

decoration

definition

Eleusis

forms

functions

further research

hybrid buildings

known examples

locations

Megalopolis

Pompeii

recently excavated/published

roofs

seating capacity

setting

similar buildings

summary

tent of Xerxes

and theaters

Troy

Odyssey (Homer)

agoras

city walls

disdain for trade

Panhellenic sanctuaries

Pharos

spring-fed cave

Oikonomos

oil lamps

Oiniadai

Oinoe

Olba

Olympia

archaeological excavations

architecture

athletic games

baths

bouleuterion

building history, overview of

color decorations

dedications

design and placement of structures

early temples

foundations

height of structures

hippodrome

internationalism

Laconian roof system

metal relief sculptures

Metroön temple

Mycenaean cult activity

palaistra

Panhellenic games

Panhellenism

Pelopeion

Philippeion

prehistoric occupation

Roof 1

roof styles

stadia

stadium

Statue of Zeus

stoas

Temple of Hera

- articulations

- column placement

- construction materials

- corpse of a soldier

- peristyle

- polychrome disk

- roof

Temple of Zeus

- altar

- architectural sculpture

- colonnade

- grid

- limestone use

- reflecting pool

- roof

topography and history

treasuries

- akroteria

- cities represented

- design

- Foundation I Sikyon

Foundation II Syracuse

Foundation IV Epidamnos

Foundation IX Selinous

Foundation X Metapontum

Foundation XI Megara

Foundation XII Gela

Gela

identifying

internationalism

life histories

location

order

Pausanias' account

prestige

sponsorship

unattributed architectural elements

unity

Olynthos

agora

houses

urban planning

water supply

Onchestos

opaion tiles

opisthodomos

Optics (Euclid)

orders, architectural

characteristics

dating use

definition

development

domestic use

French views

Hellenistic use

mixing

Roman use

see also [Doric order](#); [Ionic order](#)

Ordonnance des cinq especes de colonnes (Perrault)

Orlandos, Anastasios

Orneates of the Argolid

Oropos

Orraon

orthostates

Otto I (King), von Wittelsbach

Paestum

architectural intervention

Foce del Sele, Temple of Hera

Grand Tour

Greek – Etruscan debate

limestone use

scholarly reception/understanding

Tempio della Pace

Temple of Athena

Temple of Hera I (Basilica)

Temple of Poseidon (Hera II)

theater

Tomb of the Diver

visitors, modern

paint *see* [color](#), [paint](#)

Paionios

palaces, Hellenistic royal

Alexandria, Egypt

defining

Demetrias

Macedonian

mobile

multifunctional

Pella

Pergamon

Ptolemaic river boat

Successor kingdoms

tents

Vergina

palaistrai

Palestine

Palestrina *see* [Praeneste](#)

Panakton

Panathenaic amphora

Panathenian sanctuaries

Pancrazi, Giuseppe Maria

Panhellenic games

Panhellenic sanctuaries

origins

Panhellenism

prestige

in the space around structures

in structures

understanding over time

see also [Delphi](#); [Isthmia](#); [Nemea](#); [Olympia](#)

Panionion

Paphos, Cyprus

paradeigma

Parallèle de l'architecture antique avec la moderne (Fréart de Chambray)

Paros

Parthenon pronaos, case study

background to decisions

Bouras' proposal

choosing phase to restore

diagram

historical inconsistency

Korres-Bouras proposal

Korres' proposal

new approach

preservation of historical evidence

procedural and historical concerns

pronaos before restoration

Patara

Patras

patronage; *see also* [funding](#)

Pausanias

agoras

Athens

agora

Erechtheion

Megarian fountain

odeia

Parthenon

prytaneion

shields

stoas

bouleuteria

Chest of Kypselos

Delphi

Description of Greece

dromos and stadia

Elis

Hermione

historical items

influence on later travelers

motives for journeying

mudbrick

odeia

offerings

Olympia

hippodrome

Philippeion

Temple of Hera

Temple of Zeus

treasuries

Phokikon

Piraeus

reflecting pools

rituals

Sounion

statues

Sybaris

Tegea

theaters

Pausanias II

pediments

definition

design process

diagram

gorgoneia

Peisistratids

Peisistratos

Pella

agora

baths

dredging

houses

palace

tombs

Peloponnesian War

Penrose, F.C.

pentagram

Perachora

Perdiccas

Pergamon

Acropolis

aesthetics of space

agoronomia

agoras

astynomoi

city walls

construction phases

gates

Great Altar

gymnasium

history

identities

influence

Library

palace

plan

plan of citadel

promotion

Propylon

prostyle temples

roads

Royal District

Sanctuary of Athena Nikephoros

Sanctuary of Demeter

stadium–theater complex

stoas

Temple of Athena Nikephoros

Temple of Demeter

Temple of Dionysos

Temple of Trajan

terracing

theater

urban planning

water supply

zones

Perge

Pericles

Acropolis rebuilding program

funeral oration

gold offerings

Odeion

tent of Xerxes

peripteroi

peristyle

Archaic period

ceilings

Classical period

contested examples

definition

early use of

foreign influence

houses

as interior space

objects contained

origins

Perrault, Claude

Persian War

Acropolis buildings as memorials

Greek memorials and public honors

Lydia, defeat of

Sardis, defeat of

Sounion, destruction of

Pessinus

Phaeacia

Phaleron

Pheidias

Phenomena (Euclid)

Philadelphia

Philetairos

Philip II of Macedon

Philip III of Macedon

Philip V of Macedonia

Philo

Philon

Philo of Byzantium

Philostratos

Phokians

Phokikon

Phykos

Phyle

physical geography

piazzas

Pietrabbondante

Pinara

Pindar

Pindos mountains

Piraeus

- agoras

- baths

- city planning

- funerary monuments

- ports

- ship sheds

- Skeuotheke (Arsenal)

- theater

- walls

Piranesi, Giovanni Battista

Pisidian Antioch

Pittakis, Kyriakos

Pixodaros of Caria

Plataea, Battle of

Plato

- Academy

- drawings

- grave

- Meno diagram

- optical distortion

- shrine of Acheloös

- spectators looking down

- theoria*

Pleuron

plinth

Pliny the Elder

Colossus of Rhodes

Greek culture

Helios statue

Kroisos Temple

Mausoleum at Halikarnassos

palatial villas

Porticus Octavia

Rome's Greek architecture

tile making

Unswept Room mosaic

Plutarch

poleis

poljes

Pollitt, J.J.

Pollux

Polybius

polygonal masonry

Polykleitos

Polykrates

Pompeii

Pompey

Pope, Alexander

Porcius, M.

poros; *see also* [limestone](#)

Poseidi

Poseidonia *see* [Paestum](#)

Potidaia

Praeneste

Praxiteles

Parthenon *see under* Acropolis, Athenian

preservation of architectural remains

- anastylosis

- in Ancient Greece

- memory

- in Middle Ages

- modern Greece's approaches to

 - 1827–1842

 - 1894–1931

 - 1945–present; *see also* [Parthenon pronaos, case study](#)

- preservation vs. restoration

- techniques/technologies

- Venice Charter

prestige

- in religious ceremonies

- in the space around structures

- in structures

- understanding over time

Priene

- agora

- bouleuterion

- city gates

- fountains

- houses

- palaistra

- paved streets

- prytaneion

- Temple of Athena

- theater

- urban planning

pronaos
prostyle
Prosymna
Proto-Corinthian roof system
prytaneia
Psammetichos I of Egypt
pseudodipteral arrangement
pseudo-isodomic masonry
ptera/pteroma
Ptolemy I of Egypt
Ptolemy II of Egypt
Ptolemy III Euergetes of Egypt
Ptolemy IV Philopator of Egypt
Ptolemy VI Philometor of Egypt
Pugin, Augustus
Punic Wars
Pydna, Battle of
Pylos, Battle of
Pylos Regional Archaeological Project
Pyrrhic War
Pythagoras
Pythagorean triangle
Pytheos
 Doric order
 Halikarnassos city
 Mausoleum of Halikarnassos
 Palace at Vergina
 Temple of Athena, Priene
Qait Bey
quarries
Quatremère de Quincy, Antoine-Chrysostôme

autonomy of Greek architecture

Doric order

imitation as deceit

on Le Roy

polychromy

preservation of ruins

reductive vision of Greek architecture

rustic cabin

visual impact on observer

quays

Quinctius Valgus, C.

Rakita (Ano Mazaraki)

Rangavis, A.

reflecting pools

regulae

relief sculpture

earliest examples

funerary

materials

metopes *see* [metopes](#)

Mycenaean temple

as narrative

roofs

“small metopes”

see also [friezes](#)

religious ceremonies

research technologies

Res Gestae of Augustus

Restitution du temple d'Empedocle a Selinonte (Rochette)

Revett, Nicholas

Rhamnous

deme

fortifications

grave relief of Hiero and Lysippe

marble throne

money lending

Sanctuary of Nemesis and Themis

Temple of Nemesis

theater

Rheneia

Rhodes

agoronomia

Colossus

funerary naiskoi

Lindos *see* [Lindos, Rhodes](#)

Lorymna cave sanctuary

Macedonian siege of

quarries

Roman trading restrictions

stadia

urban planning

Rhoikos

Riegl, Alois

rituals; *see also* [festivals](#); [religious ceremonies](#)

rivers

roads

Rochette, Raoul

Romanization

Roman Republic/early Empire

architects and builders

basilicas

building techniques/technologies

Etrusco-Italic architecture

Greek culture

Greek relations

Hellenistic-to-Roman transition

arches

articulated walls

chronology

Etrusco-Italic tradition

geography and culture

Late Republic

materials and techniques

monumentalization

ordering of large spaces

patronage and purpose

Roman architecture

temples

theory and meaning

type and style

monumental architectural periods

palatial villas

porticoes

Punic Wars

Stabiae villas

surveying practice

takeover of Greek world

triumphal arches

Rome

Académie de France

Agrippa's Pantheon

amphitheater of Statilius Taurus

arched city gates

Arch of Titus

Basilica Aemilia-Fulvia

Basilica Sempronia

Campus Martius

Capitoline Temple

Cloaca Maxima

fora

Forum Holitorium

Forum of Augustus

Forum Romanum

Grand Tour

Hellenization

House of Augustus

odeia

Pergamene influence

porticoes

Porticus Frumentaria

Porticus Metelli

Porticus Octavia

public building

Saepta

Tabularium

Temple C, Largo Argentina

Temple of Apollo

Temple of Castor and Pollux

Temple of Fortuna Huiusce Diei

Temple of Honos and Virtus

Temple of Janus

Temple of Jupiter Optimus Maximus

Temple of Jupiter Stator

Temple of Portunus

Temple of Spes
theater of Marcellus
theater of Pompey
theaters
triumphal temples
victory monuments
victory temples
visitors, modern

roofs

decoration
foreign influence
houses
marble
odeia
opaion tiles
regional styles
scholarly understanding
ship sheds
standard for tiles
terracotta
 Argive system
 Corinthian style
 Laconian system
 Northwest Greek system
 Proto-Corinthian system
 “Roof 1” system, Olympia
 tile manufacture and innovation
 weight
thatch
tiles
timber frame

rose diagrams

Ross, Ludwig

Roux, Georges

Les Ruines de Paestum (Delagardette)

Les Ruines des plus beaux monuments de la Grèce (Le Roy)

Ruins of Balbec (Wood)

Ruins of Paestum (Major)

Ruins of Palmyra (Wood)

Ruins of the Palace of the Emperor Diocletian at Spalatro (Adams)

Ruskin, John

Sagalassos

Salamis, Battle of

Salamis, Cyprus

Salamis Metrological Relief

Samos

agoronomia

aqueduct

breakwater

Heraion

altars

architects

capitals

colonnade

column bases

cult images bases

dipteroi

expansion

frescoes

Hekatompedon I

Hekatompedon II

Ionic order
monumentality
painted figures
Polykrates temple
Rhoikos temple
size
thatched roof
two-skin construction

marble use

mole

Sacred Way

ship sheds

Syracuse connection

tunnel of Eupalinos

Samothrace

Sanctuary of the Great Gods

Stoa of Philip V

sandstone

Sangri, Naxos

sarcophagi

Sardis

baths

construction techniques

defeat by Persia

mudbrick walls

Roman imperial temple

stadium–theater complex

Temple of Artemis

Satyros

Schaubert, Eduard

Schedia, Egypt

scholarship, modern

books

Grand Tour

Greek – Etruscan debate

Irish

prints

refinements

see also [British ideas/scholarship](#); [French ideas/scholarship](#)

Scopas

sculpture

akroteria *see* [akroteria](#)

caryatids

division of labor

friezes *see* [friezes](#)

grave markers

Hellenistic

impact on viewers

in *Ion* (Euripides)

meanings

metopes *see* [metopes](#)

painted

reliefs *see* [relief sculpture](#)

sculpture in the round

silence on, ancient authors'

statues *see* [statues](#)

visibility to viewers

sea gates

Segesta, Sicily

sekos

Seleucids

Selge

Selinous, Sicily

Archaic period

Carthaginian invasion

city planning

city walls

Doric frieze

hypaethral temples

limestone use

Propylon of Demeter Malophoros

Temple A

Temple B

Temple C

Temple D

Temple E (Hera)

Temple F (FS)

Temple G

Temple M

Temple O

Temple of Demeter Malaphoros

Temple Triolo N

Temple Y

treasury at Olympia

Semiramis of Babylon

Sempronius Gracchus, T.

Sennacherib of Assyria

Seven Wonders of the World

attitudes towards, changing

characteristics

Colossus of Rhodes

history of “the list”

Lighthouse of Alexandria

Mausoleum of Halikarnassos

structural marvels

as tourist trail

as works of art

Seven Years' War

Shalmaneser V of Assyria

ship sheds

shops

Sicily

Akragas (Agrigento) *see* [Akragas \(Agrigento\), Sicily](#)

Akrai

Archaic period, early/middle

Archaic period, late

assembly buildings

Atlantes

baths

Classical, late and Hellenistic periods

Classical period, early

Classical period, high

Doric and Ionic mixture

Epipolae

Gela *see* [Gela, Sicily](#)

Geometric and Orientalizing periods

Grand Tour

Himera *see* [Himera, Sicily](#)

houses

Iaitas

influence of

Ionic order

Kamarina

limestone use

map of

Megara Hyblaia

Morgantina *see* [Morgantina, Sicily](#)

Naxos *see* [Naxos, Sicily](#)

painted roof elements

Punic Wars

Roman takeover

Segesta

Selinous *see* [Selinous, Sicily](#)

Soluntum

stairs and attics

Syracuse *see* [Syracuse, Sicily](#)

Taormina

temple orientation

theaters

urban defenses

urban planning

windows

siege weaponry

Sikyon

fountain

stoa

treasury at Delphi

treasury at Olympia

Silenos

silver mines

sima

Simena (Lycia)

Simonides

Siphae

Siphnos

- silver mines
- treasury at Delphi
- Skopas of Paros
- Smirke, Robert
- Smyrna
- Soane, John
- Society of Dilettanti
- socles
- soffit
- Solon
- Soluntum, Sicily
- Sophilos
- Soros
- Sosos (of Pergamon)
- Sostratos of Knidos
- Soufflot, Jacques-Germain
- Sounion
 - agora
 - deme
 - fortifications
 - marble use
 - Panathenian sanctuary
 - quadrennial festival
 - ship sheds
 - Temple of Athena
 - Temples of Poseidon
- Southern Italy
 - Archaic period, early/middle
 - Archaic period, late
 - assembly buildings
 - Atlantes

baths

Classical, late and Hellenistic periods

Classical period

Doric and Ionic mixture

Geometric and Orientalizing periods

Grand Tour

Ionic order

limestone use

map

painted roof elements

stairs and attics

style

temple orientation

theaters

tomb paintings

tombs

urban planning

windows

see also specific sites

Sparta

color

defeat at Oinoe

dromos

Laconian roof system

relief sculpture

Temple of Athena Chalkioikos

victory monuments at Delphi

spellings

spirai

Spon, Jacob

springs, sacred

Stabiae

stadia

Stadte und Bauten der Westgriechen (Mertens)

stairs, temple

Statue of Liberty, New York (Bartholdy)

statues

Aemilus Paullus, Delphi

Aemilus Paullus, Demetrias

Agrippa, Athens

athletes

cult images

Apollo, Bassai

Apollo, Didyma

Apollo, Soros

Archaic period

Athena Parthenos, Parthenon

Athena Promachos, Acropolis

Dionysos, Ikaria

Hephaisteion

Nemesis, Rhamnous

Winged Victory, Samothrace

Zeus, Olympia

Demetrios Poliorcetes, Demetrias

funerary monuments

Helios (Colossus), Rhodes

Herakles, Akragas

Mausoleum at Halikarnassos

military

Pergamon

Philippeion

portraits of donors

votive statues

stelai

athletic events

building records

funerary

prestige

Stertinius, L.

stoas

agoras

commercial activity

memorial

overview

painted

wooden

Strabo

Ancyra

bouleuteria

Cape Zoster

harbors

Hellenistic Naples

Metapontum

palaces

Pergamene aesthetics of space

urban planning

Stratonikaia

Stratos

streets; *see also* [urban planning](#)

stretchers/headers

Stuart, James

Stubbs, J.

stucco

stylobate

definition

diagram

planning

Stymphalos

Suetonius

Sulla

Sybaris

frieze

monumentality

treasury at Olympia

symmetria

syngraphe

Syracuse, Sicily

Apollonion

baths

city defenses

city planning

fall to Rome

Geometric period shrine

harbors

influence of

limestone use

Olympieion

quarries

Samos connection

ship sheds

Temple of Athena

theater

treasury at Olympia

Taormina, Sicily

Taposiris Magna, Egypt

Taras (Tarento)

technologies, construction *see* [construction techniques/technologies](#)

Tegea

- Amazon sculpture

- contracts

- refuge

- Temple of Athena Alea

- theater

Telephos

temenos

Tempesta, Antonio

temple development

- ancestor worship

- dipteroi

- Hellenistic period *see* [Hellenistic architecture, sanctuaries](#)

- Hellenistic-to-Roman transition

- monumentality *see* [monumentality](#)

- orders *see* [orders, architectural](#)

- Panhellenic sanctuaries *see* [Panhellenic sanctuaries](#)

- peristyle *see* [peristyle](#)

- polis, rise of

- protogeometric cult buildings

- rulers' dwellings

- size

- stone construction

- temple-hestiatoria

- tile roofs

temples

- altars

- as arenas of competitions

- as banks
- barriers
- bases for cult images
- cult images/statues
- and cultural identity
- functions
- interiors *see* [interiors, temple](#)
- as museums
- number of
- orientation
- as place of refuge
- prestige politics
- as ritual dining halls
- rituals
- security
- as symbols of wealth/power
- topographic settings
- visitors
- votive offerings
- see also specific sites*

tents

Teos

- bouleuterion

- Temple of Dionysos

Termessos

terracotta; *see also* [roofs, terracotta](#)

tesserae

tetrastyle

Thales of Miletos

Thasos

theaters

architectural drawings
ceramic evidence
circular arrangement
form
functions
geometry
income generation
parts
sacralization
scholarly understanding
seating capacity
sight lines
technology
terminology
see also [bouleuteria](#); [odeia](#)

Thebes

Theodoros

Theophanes

Theophrastus

theoretical geography

theoros

Thera

Thermon

Megaron B

roof system

Temple C

Temple of Apollo

Thermopylai

Theron of Akragas

Thessaloniki

Thevet, André

tholos

Thorikos

Thrace

Thucydides

Enneakrounos fountain house

funeral oration by Pericles

Gela

honors

offerings

Sparta

stadion

temples as symbols of wealth/power

Themistoclean circuit wall

Thurii

Tiberius

Tibur

Timoleon

Timotheos

Tiryns

Tivoli

toichobate

tombs

chamber tombs

lighthouse tombs

Mausoleum at Halikarnassos

naiskoi

Peribolos tombs

rupestral tombs

temple tombs with funerary crypts

underground chamber tombs

topophilia

Tourkovouni

Trajan

Tralles

transport of stone

trapezai

trapezoidal isodomic masonry

Travels in Greece (Chandler)

travels to monuments

triglyph–metope frieze; *see also* [Doric order](#)

triglyphs

Troy; *see also* [Iliad \(Homer\)](#)

Trypeti, Crete

tsunamis

Tuan, Yi-fu

tuff

Turris Babel (Kircher)

Tuscan order

tympana

Unswept Room (Sosos)

urban defenses *see* [city walls and fortifications](#)

urban planning

- agoras

- Archaic period

- Classical period

- Hellenistic period

- main issues

- roads and streets

- Roman

- stoas

- terminology, ancient

- water supply and fountains

Valerius Flaccus, L.

van Heemskerck, Maerten

Vari

Varro

Vasi, Giuseppi

Vathy Limenari, Donousa

Velia

Velleius Paterculus

Venice Charter

Vergina (Aigai)

- bouleuterion

- royal palace

- stoas

- tombs

Vers un architecture (Le Corbusier)

vessels, dedicated

vessels, funerary stone

viae

Viollet-le-Duc, Eugène-Emmanuel

- architect

- Doric temples

- Greek influence

- Hephaistion

- Labrouste's study of Paestum

- polychromy

- restorations

- visual experience of form

visitors to temples

Vitruvian Man

Vitruvius

- agoras vs. forums

Alexandria, Egypt

architectura, defining

architectural theory

architectura, defining

architectura, departments

architectura, processes and principles

ideai

Vitruvian Man

Basilica at Fano

baths

caryatids

cement

Corinthian order

Deinokrates and Alexander the Great

entasis

fora

fortified city walls

Greek architects

Greek drawings

Greek geometry

Greek vs. Etrusco-Italic architecture

gymnasia and palaestrai

Hermogenes

houses

influence

Ionic order in Asia Minor

Kroisos Temple, Ephesos

Mausoleum at Halikarnassos

Meno's diagram

modern understanding

mortared rubble masonry

mudbricks
orders, architectural
Pella
public palaistra
Pytheos
refinements
Rhodes, siege of
Roman temples
Rome's Greek architecture
rustic cabin
scale planning
Sounion
technical bent
temple design
Temple of Artemis, Magnesia
theater design
theaters
unknowns
see also [*De Architectura* \(Vitruvius\)](#)

Vivares, François

Voigtländer, Walter

volcanoes

volute

von Klenze, Leo

von Zanth, Karl Ludwig Wilhelm

votive monuments

votive offerings

Voyage du jeune Anacharsis en Grèce (Barthélemy)

Voyage pittoresque de la Grèce (de Choiseul-Gouffier)

Walpole, Horace

War of Austrian Succession

War of Greek Independence

water management

aqueducts *see* [aqueducts](#)

drains *see* [drains](#)

fountains

fresh water supply

for public baths

in stadia

Wheler, George

Wilkins, William

Winckelmann, Johann Joachim

windows

fortifications

houses

temples

Wood, Robert

wood, use in buildings

columns

cult statues

early buildings

entablature

fasciae

frames

houses

interior elements

orders, architectural

roof supports

sheathing

stoas

wall reinforcements

Wyatt, James

Xanthos

agora altar

city walls

Nereid Monument

Xeneion club

Xenophon

Xerxes of Persia

xystos

Young, William

Yria, Naxos

Zagora, Andros

Zarakes

Zeuxis of Heraklea

WILEY END USER LICENSE AGREEMENT

Go to www.wiley.com/go/eula to access Wiley's ebook EULA.